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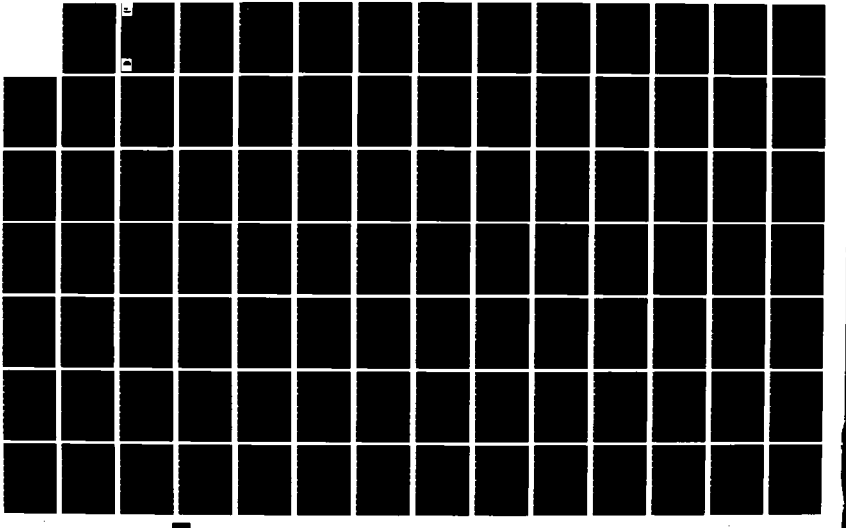

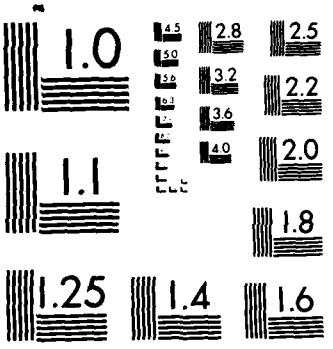

MICROCOPY RESOLUTION TEST CHART
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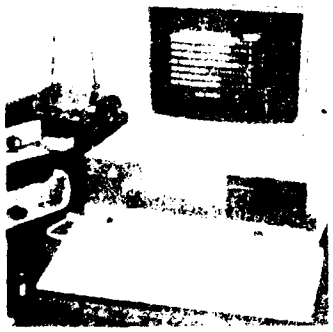
US Army Corps of Engineers

AD-A162 469



GEOTECHNICAL LABORATORY

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INSTRUCTION REPORT GL-85-1

(2)

MICROCOMPUTER BORING AND SUBSURFACE DATA PACKAGE: USER'S GUIDE

by

William E. Strohm, Jr.

Geotechnical Laboratory

DEPARTMENT OF THE ARMY
Waterways Experiment Station, Corps of Engineers
PO Box 631, Vicksburg, Mississippi 39180-0631

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September 1985
Final Report

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Prepared for

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DEPARTMENT OF THE ARMY
WATERWAYS EXPERIMENT STATION, CORPS OF ENGINEERS
P.O. BOX 631
VICKSBURG, MISSISSIPPI 39180-0631

REPLY TO
ATTENTION OF

WESGR-R

8 Nov 1985

STATUS OF COMPUTER APPLICATIONS IN GEOTECHNICAL ENGINEERING

C A G E PROJECT

The status of CAGE data base packages is summarized on the attached chart (Encl 1). Revision of the boring log plot to add blow counts and a short form of the data base are shown in Encl 2. Menus for the complete data entry modules for the instrumentation package on both the Harris and micro is shown in Encl 3. Menus for a complete (simplified) version of grouting package using Los Angeles District forms for New River Dam is shown in Encl 4.

The status of the slope stability package work is summarized on Encl 5.

MAKE YOUR HIGH PRIORITY NEEDS KNOWN.

Contacts: Bill Strohm, WESGR, FTS 542-2604
Earl Edris, WESGE, FTS 542-3378

STATUS OF C A G E DATA PACKAGES OCTOBER 1985

DATA PACKAGE	COMPUTER VERSION	DATA ENTRY	SUMMARY TABLES	GRAPHICS PLOTS (1)	USER'S GUIDE
Boring & Subsurface	CDC	Q&A (C)	User querry (C)	Map, contours, logs, profiles (C)	IR GL-84-1 Sep 84
	Harris	(P)	(P)	(P)	(P)
	Micro (2)	Form (C)	10 types (C)	Simple map, & logs on dot matrix printer (C)	Being Distributed
	Micro*(2)	Form (C)	10 types (C)	same as above (C)	(P)
	One file version & program to convert to CDC (C)				
Construction Control	CDC	Q&A (C)	4080 Form, many other & querry (C)	Shotgun, statistical, general x-y (C)	IR GL-83-1 Apr 83
	Harris	(None planned)			
	Micro	Form (C)	(Creates file for CDC version) (C)		
Instrumentation: Piezometers, staff gage, weir, sump, rainfall, weather Surface monuments Settlement gages Inclinometers Stress meters Strain gages	CDC#	Q&A (C)	User querry (C)	Time history, X-section, map, contour, general x-y (C)	IR GL-85-__ (Piez. type) (Being published) (C)
	Harris#	Form (C)	(D)	(D)	(P)
	Harris	Pittsburgh District's own version for piezometer type instruments, settlement gage and monuments, and alignment pins (C)			
	Micro#	Form (C)	(D)	(D)	(P)
	Micro*#	(P)	(P)	(P)	(P)
Field Grouting	Micro	Form (C)	L.A. Dist. forms from New River Dam (C)	(P)	(P)
	Micro*	Form (C)		(P)	(P)

LEGEND:

Q&A = Question & answer
Form = Screen form to fill in
Micro = Microcomputer with dBASE II
Micro* = Microcomputer with dBASE III
(C) = Completed
(D) = Being Developed
(P) = Planned
= All instrument types

Notes: (1) Graphics programs on CDC will be moved to the Harris; also to the microcomputer using micro-TEMPLET or micro-GCS.

(2) Includes programs to retrieve data from CDC version.

ENCL. 1

LOG OF STRATA NAMES AND DESCRIPTIONS. VERTICAL SCALE = 10 FT/IN

CS-4 SID= 437
E-W CORD= 678790.00
N-S CORD= 945420.00
09/16/1982
TOP EL= 290.40 FT
DEPTH= 36.00 FT

CS-5 SID= 438
E-W CORD= 678790.00
N-S CORD= 945420.00
09/17/1982
TOP EL= 288.90 FT
DEPTH= 36.00 FT

DISTANCE = 0 FEET

ELEVATION FEET

	Blows/ft			Blows/ft		
290		SC	OGN MED GRA CLYSD,W/MINORGVL			290
		SC	OGN-GR		SC	DK BR F GRA CLY SD
		[SC]	[TAN]	10	SC	OGN
		SC	F GRA	6	[SC]	[T]
		SC	VERY CLY	6	SC	OGN-GR
				15	SC	MINOR C GRA
				35		
280	7			36	SC	OGN-R,F-MED GRA 280
	4	SC	LT-R,F-C GRA	62		
	6			52		
	19	CL	WHT-PIN,STF LEANCL,W/F GRASD	77	SC	F-C GRA
	36	[MH]		37	SC	DK R-WHT
	42	SC	WHT-PIN,F GRA CLY SD,MIC	37		
	69	SC	F-C GRA	75	SM	R-WHT-OGN,F-C,GRASIYSD,W/CLY
270	40			100/0.6		270
	64			100/0.9		
	60	WT	24 HOUR	100/0.8	SM	WHT-PIN F-MED,GRA
	37	SM	PIN-WHT,F-MED GRA SIY SD	100/0.6	WT	72 HOUR
	54	WT	DD	100	WT	DD
	72			97		
260	100/0.9	SM	WHT	80	SC	PIN-WHT F-MED GRA V CLY SD 260
	100			57		
	100/0.8	SM	F-C GRA SIY SD	70		
	83	SC	WHT-PIN,F GRA V CLY SD,MIC	100/0.9		
	75	BH		74		
		EL=	254.40			
				57	BH	
					EL=	252.90
250						250

****
* PROJ: COM *
* SITE: ROB *
*LOG OF BORINGS CS-4 CS-5 *
****

ENCL. 23

HOLE NO. FS502

DRILLING LOG	DIVISION Southwestern	INSTALLATION Tulsa District	SHEET ___ OF ___
1. PROJECT TRAINEE BARRACKS #265 SITE DESCRIP.		10. SIZE AND TYPE OF DRILL	
2. LOCATION (Coordinates or Station) 1881050.0 N 483370.0 E		11. DATUM FOR ELEVATION FT MSL 12. MANUFACTURE'S DESIGNATION OF DRILL	
3. DRILLING AGENCY USCE		13. TOTAL NO. OF OVER-BURDEN SAMPLES	DIST. UNDIST.
4. HOLE NO. FS502		14. TOTAL NO. OF CORE BOXES	0
5. NAME OF DRILLER		15. ELEVATION GROUND WATER	
6. DIRECTION OF HOLE VERTICAL __ DEG FROM VERTICAL		16. DATE HOLE STARTED	COMPLETED 10/04/1983
7. THICKNESS OF OVERBURDEN	0.0	17. ELEVATION TOP OF HOLE	1103.4
8. DEPTH DRILLED INTO ROCK	0.0	18. TOTAL CORE RECOVERY FOR BORING	0.0%
9. TOTAL DEPTH OF HOLE	44.5	19. INSPECTOR JABARA	

SPECIAL SHORT FORM OF DATA BASE TO STORE INFORMATION AT TOP OF ENG FORM 536

ENCL 26

INSTRUMENTATION DATA BASE MENU

	OPTION
SUMMARY OF PROCEDURES	1
ENTER NEW DATA OF MODIFY EXISTING DATA	2
PLOT DATA	3
PRINT SUMMARY REPORTS	4
RETURN TO OPERATING SYSTEM	5

ENTER SELECTION: :2

ENTER NEW DATA OR MODIFY EXISTING DATA

	SELECTION
PROJECT DATA	1
PIEZOMETER	2
SURFACE MONUMENTS	3
SETTLEMENT POINTS	4
INCLINOMETERS	5
SOIL PRESSURE METERS	6
STRAIN GAUGES	7
ALL INSTRUMENTS	8
EXIT TO MAIN MENU	9

ENTER SELECTION: :2

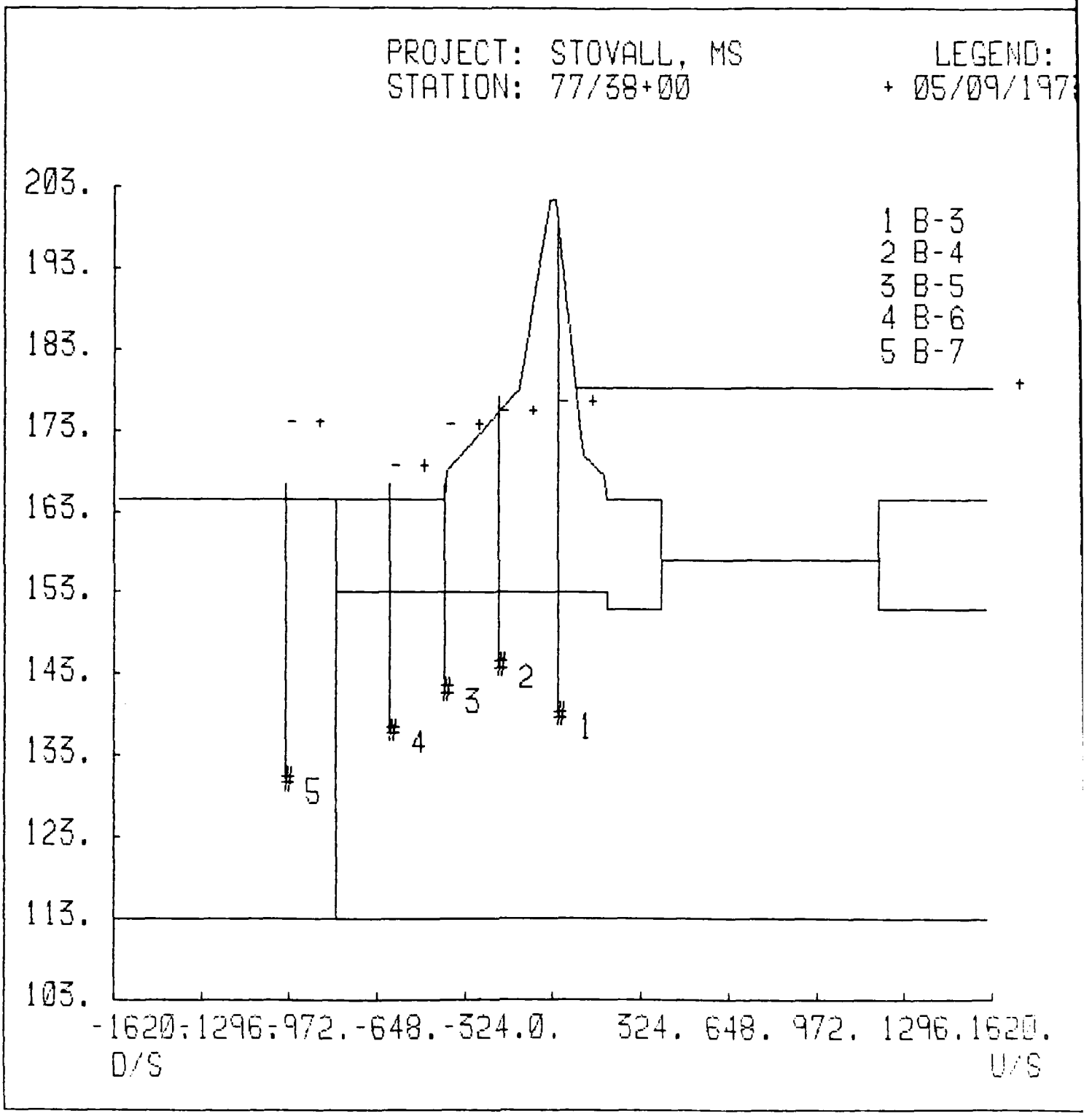
ADD OR MODIFY PIEZOMETER DATA

	SELECTION
ADD INSTRUMENT DATA	1
MODIFY EXISTING INSTRUMENT DATA	2
ADD NEW READINGS	3
BE PROMPTED FOR SETS OF READINGS	4
EXIT TO PREVIOUS MENU	5
EXIT TO OPERATING SYSTEM	6

Enter Selection :2

ENCL. 3d

(2)



DC MATRIX PLOT WITH MIDS TENDON

ENCL 3b.

VERSION OF GROUT DATA BASE FOR LOS ANGELES DISTIRCT FORM

MENU FOR ENTERING NEW GROUTING RECORD DATA
OR REVIEWING, OR EDITING EXISTING DATA

	Selection
PROJECT AND GROUT HOLE DATA	1
DRILLING RECORD	2
PRESSURE TEST DATA	3
GROUTING DATA	4
PRINT GROUTING REPORTS	5
RETURN TO OPERATING SYSTEM	9

Enter Selection 1

L. A. DIST PROJECT AND DRILLING DATA Last Record Entered.

PROJECT	LOCATION	STATION	OFFSET
NEW RIVER DAM	CORE TRENCH (W)	30+00	3.8RS
ELEVATION	HOLE NO.		
1351.2	30+00P		

INCLINATION	DIAMETER	DEPTH NIPPLE	DATE DRILLED	DATE PRESSURE TESTED
30W S72W	2.5		01/23/84	01/24/84
DATE GROUTED	DEPTH INTERV.	ZONE	TAKE (PLACED)	WASTED PERM, K=
01/24/84	50-75	III	2.9	0.0 0.40

TO ENTER NEW PROJ/HOLE DATA OR EDIT, REVIEW, OR PRINT EXISTING INFO
1 = enter new data 2 = edit data shown above,
3 = review or edit another hole number,
4 = skip back one record, 5 = skip ahead one record,
6 = print a record, 7 = exit.

enter action number:

ENCL 42

VERSION OF GROUT DATA BASE FOR LOS ANGELES DISTIRCT FORM

MENU FOR ENTERING NEW GROUTING RECORD DATA
OR REVIEWING, OR EDITING EXISTING DATA

	Selection
PROJECT AND GROUT HOLE DATA	1
DRILLING RECORD	2
PRESSURE TEST DATA	3
GROUTING DATA	4
PRINT GROUTING REPORTS	5
RETURN TO OPERATING SYSTEM	9

Enter Selection 5

VERSION OF GROUT DATA BASE FOR LOS ANGELES DISTIRCT FORMS

MENU FOR PRINTING GROUTING REPORTS

	Selection
FIELD GROUTING RECORD FOR HOLE AND DEPTH INTERVAL	1
DRILLING AND GROUTING SUMMARY FOR HOLE RANGE	2
DAILY PAY ITEM RECORD FOR SELECTED DATE	3
RETURN TO DATA ENTRY MENU	4
RETURN TO OPERATING SYSTEM	9

Enter Selection: 2

ENCL 46

NEW RIVER DAM, ARIZONA - FOUNDATION GROUTING SUMMARY

HOLE NUMBER	HOLE LOCATION STATION	OFFSET	G. S. ELEV. (ft)	INCLIN/ BEARING	PRESSURE TESTING DEPTH (ft)	FLOW (gpm)	PRESS (psi)	K VALUE (ft/day)	DATE GROUTED	GROUTING TAKE (sacks)	PRESS. (psi)	MIX (W/C)	
29+80P	29+80	7.0LN	1352.5	VERT.	0-25	0.00	15.0	0.00	DEFERRED		0.0		MINIMUM
											0.0		MAXIMUM
					25-50	0.50	15.0	0.05	01/13/84	1.3	15.0	6:1	MINIMUM
											15.0	6:1	MAXIMUM
					50-75	16.30	25.0	0.90	01/24/84	62.3	10.0	1:1	MINIMUM
											25.0	6:1	MAXIMUM
29+82.5T	29+81	8.0LN	1353.3	7.5W	0-50	0.21	15.0	0.02	DEFERRED				MINIMUM
													MAXIMUM
					50-75	0.10	25.0	0.01	DEFERRED				MINIMUM
													MAXIMUM
29+85S	29+85	6.0LN	1352.5	15W	0-50	5.50	15.0	0.50	01/18/84	0.6	0.0		MINIMUM
											15.0	6:1	MAXIMUM
					50-75	5.10	25.0	0.03	01/27/84	5.2	0.0		MINIMUM
											25.0	6:1	MAXIMUM
29+87.5T	29+88	5.5L(N)	1352.5	22.5W	0-50	0.00	15.0	0.01	DEFERRED				MINIMUM
													MAXIMUM
					50-75	0.25	25.0	0.02	DEFERRED				MINIMUM
													MAXIMUM
29+90P	29+92	4.8LN	1351.6	30W S77W	0-25	0.00	15.0	0.00	DEFERRED		0.0		MINIMUM
											0.0		MAXIMUM
					25-50	2.70	15.0	0.30	01/14/84	10.1	15.0	4:1	MINIMUM
											15.0	6:1	MAXIMUM
					50-75	7.80	25.0	0.50	01/24/84	10.7	25.0	6:1	MINIMUM
											25.0	6:1	MAXIMUM
29+95S	29+97	4.5LN	1352.1	30W	0-50	2.40	15.0	0.17	01/18/84	0.9	0.0		MINIMUM
											15.0	6:1	MAXIMUM
30+00P	30+00	3.8RS	1351.2	30W S72W	0-25	0.00	15.0	0.00	DEFERRED		0.0		MINIMUM
											0.0		MAXIMUM
					25-50	2.20	15.0	0.40	01/14/84	2.2	15.0	6:1	MINIMUM
											15.0	6:1	MAXIMUM
					50-75	0	0	0.00	01/24/84	2.9	25.0	6:1	MINIMUM

Fig 4c

NEW RIVER DAM, ARIZONA - FOUNDATION GROUTING SUMMARY

HOLE NUMBER	HOLE LOCATION STATION	OFFSET	G. S. ELEV. (ft)	INCLIN/ BEARING	DEPTH (ft)	PRESSURE TESTING FLOW (gpm)	PRESS (psi)	K VALUE (ft/day)	DATE GROUTED	GROUTING TAKE (sacks)	PRESS. (psi)	MIX (W/C)	
29+80P	29+80	7.0LN	1352.5	VERT.	0-25	0.00	15.0	0.00	DEFERRED		0.0		MINIMUM
											0.0		MAXIMUM
					25-50	0.50	15.0	0.05	01/13/84	1.3	15.0	6:1	MINIMUM
											15.0	6:1	MAXIMUM
					50-75	16.30	25.0	0.90	01/24/84	62.3	10.0	1:1	MINIMUM
											25.0	6:1	MAXIMUM
29+82.5T	29+81	8.0LN	1353.3	7.5W	0-50	0.21	15.0	0.02	DEFERRED				MINIMUM
													MAXIMUM
					50-75	0.10	25.0	0.01	DEFERRED				MINIMUM
													MAXIMUM
29+85S	29+85	6.0LN	1352.5	15W	0-50	5.50	15.0	0.50	01/18/84	0.6	0.0		MINIMUM
											15.0	6:1	MAXIMUM
					50-75	5.10	25.0	0.03	01/27/84	5.2	0.0		MINIMUM
											25.0	6:1	MAXIMUM
29+87.5T	29+88	5.5L(N)	1352.5	22.5W	0-50	0.00	15.0	0.01	DEFERRED				MINIMUM
													MAXIMUM
					50-75	0.25	25.0	0.02	DEFERRED				MINIMUM
													MAXIMUM
29+90P	29+92	4.8LN	1351.6	30W S77W	0-25	0.00	15.0	0.00	DEFERRED		0.0		MINIMUM
											0.0		MAXIMUM
					25-50	2.70	15.0	0.30	01/14/84	10.1	15.0	4:1	MINIMUM
											15.0	6:1	MAXIMUM
					50-75	7.80	25.0	0.50	01/24/84	10.7	25.0	6:1	MINIMUM
											25.0	6:1	MAXIMUM
29+95S	29+97	4.5LN	1352.1	30W	0-50	2.40	15.0	0.17	01/18/84	0.9	0.0		MINIMUM
											15.0	6:1	MAXIMUM
30+00P	30+00	3.8RS	1351.2	30W S72W	0-25	0.00	15.0	0.00	DEFERRED		0.0		MINIMUM
											0.0		MAXIMUM
					25-50	2.20	15.0	0.40	01/14/84	2.2	15.0	6:1	MINIMUM
											15.0	6:1	MAXIMUM
					50-75	0	0	0.00	01/24/84	2.9	25.0	6:1	MINIMUM

Figure 4c

CORPS-WIDE SLOPE STABILITY PACKAGE

- SINCE 1983, TASK GROUP HAS REVIEWED EXISTING PROGRAMS.
- COMPLETED A CRITERIA DOCUMENT (WES MISC. PAPER GL-85-8) (DISTRIBUTED TO ALL DISTRICTS AND DIVISIONS).
- RECOMMENDED THREE INTERIM PROGRAMS, ON CORPS LIBRARY:
  - * SSTAB2 - SPENCER'S METHOD I0026
  - * STABR - MODIFIED BISHOP'S METHOD I0027
  - * DGSLOPE - MODIFIED SWEDISH METHOD, I0025 (KANSAS CITY ARC AND WEDGE)
- SELECTED "UTEXAS" TO BE MODIFIED TO MEET CRITERIA FOR ONE TIME DATA ENTRY, GRAPHICS CHECK, USE OF ANY OF THE ABOVE THREE METHODS, AND COMPLETE TABULAR AND GRAPHICS OUTPUT.
- MODIFIED BISHOP AND MODIFIED SWEDISH CIRCULAR AND NON-CIRCULAR SEARCH HAVE BEEN ADDED. OPERATES ON CDC, HARRIS, AND MICRO'S. DRAFT USER'S GUIDE COMPLETED.
- DURING FY 86, USER'S GUIDE (WITH THEORY, EXAMPLES, AND HAND CHECKS), AND GRAPHICS MODULE WILL BE COMPLETED. TO BE RELEASED APRIL 1986.

ENCL 5

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE *(When Data Entered)*

REPORT DOCUMENTATION PAGE

READ INSTRUCTIONS BEFORE COMPLETING FORM

1. REPORT NUMBER: Instruction Report GL-85-1	2. GOVT ACCESSION NO.: AD-A162469
3. RECIPIENT'S CATALOG NUMBER	
4. TITLE *(and Subtitle)*: MICROCOMPUTER BORING AND SUBSURFACE DATA PACKAGE: USER'S GUIDE	5. TYPE OF REPORT & PERIOD COVERED: Final Report
	6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s): William E. Strohm, Jr.	8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS: US Army Engineer Waterways Experiment Station, Geotechnical Laboratory, PO Box 631, Vicksburg, Mississippi 39180-0631	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS: Operation and Maintenance, Army, Facilities and Investigation Studies Program
11. CONTROLLING OFFICE NAME AND ADDRESS: DEPARTMENT OF THE ARMY, US Army Corps of Engineers, Washington, DC 20314-1000	12. REPORT DATE: September 1985
	13. NUMBER OF PAGES: 160
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19. KEY WORDS *(Continue on reverse side if necessary and identify by block number)*

Information storage and retrieval systems--Boring (LC)
Boring--Computer programs (LC)
BORDM (Information retrieval system) (WES)
Data base management (LC)
Underground areas (LC)

20. ABSTRACT *(Continue on reverse side if necessary and identify by block number)*

A data base package for storage, retrieval, and display of boring and subsurface data for geotechnical projects is described, and detailed instructions for using the package are given with examples for actual projects. The data package is designed for storage, rapid retrieval, and display of boring locations and boring logs. The package provides for easy, interactive data entry and editing. Data storage and retrieval are accomplished using a purchased copy of dBASE II Data Base Management System (trademark of Ashton-Tate) on

(Continued)

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE *(When Data Entered)*

20. ABSTRACT (Continued).

microcomputers. The data entry and retrieval programs developed for the package are designed for a low skill level and minimum training of personnel.

PREFACE

This user's guide describes the use of a data base package for storing and displaying boring information and subsurface data on a microcomputer. This package matches the data base package used on the Corps-wide time-sharing system and described in Instruction Report GL-84-1. The package is a product of the Computer Applications in Geotechnical Engineering (CAGE) project sponsored by the Office, Chief of Engineers, US Army. Development of this microcomputer version was funded under the Operation and Maintenance, Army (O&MA), Facilities and Investigation Studies Program.

This report was prepared by Mr. W. E. Strohm, Jr., Engineering Geology and Rock Mechanics Division, Geotechnical Laboratory (GL), US Army Engineer Waterways Experiment Station (WES). Development of this CAGE package was carried out under the supervision of Dr. Don C. Banks, Chief, Engineering Geology and Rock Mechanics Division, GL, and under the general supervision of Dr. William F. Marcuson III, Chief, GL. This report was edited by Mr. R. A. Baylot, Jr., Publications and Graphic Arts Division.

Commanders and Directors of WES during development of this data base package and preparation of this user's guide were COL Tilford C. Creel, CE, and COL Robert C. Lee, CE; Technical Director was Mr. Fred R. Brown. During publication of this report, COL Allen F. Grum, USA, was Director of WES; Technical Director was Dr. Robert W. Whalin.

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DTIC TAB	☐
Unannounced	☐
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By	
Distribution /	
Availability Codes	
Dist	Avail and / or Special
A-1	

PREFACE

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A-1	

CONTENTS

CONVERSION FACTORS, NON-SI TO SI (METRIC) UNITS OF MEASUREMENT

Non-SI units of measurement used in this report can be converted to SI (metric) units as follows:

Multiply	By	To Obtain
feet	0.3048	metres
inches	2.54	centimetres
pounds (force) per square inch	6.894757	kilopascals
pounds (mass) per cubic foot	16.01846	kilograms per cubic metre

MICROCOMPUTER BORING AND SUBSURFACE DATA PACKAGE: USER'S GUIDE

PART I: INTRODUCTION

Purpose

1. The purpose of this report is to provide a description and instructions for the use of the microcomputer version of the boring information and subsurface data package entitled BORDBM. The package was developed for Corps-wide use under the Computer Applications in Geotechnical Engineering (CAGE) project. This report must be used in conjunction with other applicable instructions regarding the microcomputer operating system and instructions for creating and manipulation of a data base using a software package called dBASE II (trademark of Ashton-Tate).

Basic Definitions

2. A data base can be defined as items of information and groups of data values stored together in an orderly form such that access to all or any part of the information or data can be readily accomplished. Boring logs and field and laboratory test data stored in a filing cabinet could be classified as a simple form of a data base. A computerized data base is one that uses a computer and associated hardware for data entry, storage, and access. A data base package includes, in addition to the data base itself, all peripheral software that enables the data not only to be quickly and orderly stored, but also accessed, manipulated (or analyzed) by the most useful means, and displayed in the most useful manner for the user. A data base package can therefore be categorized as an engineering tool. It can, if properly used, be a powerful tool that greatly enhances the usefulness and value of geotechnical information and data.

Background

3. The initial boring and subsurface data package was first used in 1982 and refinements and a user's guide were completed in 1984. The US Army Engineer District, Savannah served as the pilot district and used the package on the Corps-wide time-sharing system to store data for several military installations and projects. Other

Districts are using the package for military and civil works projects. The microcomputer version was started in 1983 and modified in 1985 to match the mainframe version. A special set of programs (package) was developed to allow transfer of data from the Corps-wide time-sharing system to the microcomputer system.

Application

4. The data base package BORDBM is intended to provide a convenient means for storing data from field subsurface investigations and laboratory tests and then displaying desired data in the form of tables or graphic plots useful in the design of facilities. The primary benefit is that the type and extent of subsurface information existing in a given area can be quickly determined for a new project. Selected data can be displayed and used in design studies and additional data needs can be readily determined.

Computer Requirements

5. The boring data base programs have been written using dBASE II (trademark of Ashton-Tate) software on a microcomputer with the MS-DOS (trademark of Microsoft Corp.) or the CP/M (trademark of Digital Research, Inc.) operating system. The microcomputer should have a 10-megabyte hard disk to provide sufficient storage for a large number of borings. As a rough estimate, 5,260 bytes are required for storage of data from one boring (see para. 14). A dot matrix printer is needed for simple plots and summary tables. Future graphics enhancements will require an x-y plotter.

Report Organization

6. The remainder of this report is divided into two parts. Part II describes data entry and storage and Part III describes data retrieval and display. Examples of data entry are shown in Appendix A. Special instructions for record deletion are given in Appendix B. Appendix C gives examples of boring location plots and data reports, while the retrieval of data from the version on the Corps-wide time-sharing system is shown in Appendix D. A complete listing of all BORDBM programs appears in Appendix E.

PART II: DATA ENTRY AND STORAGE

Data Base Structure

7. The proprietary software (dBASE II by Ashton-Tate) used to develop the microcomputer version of the boring data package is a relational type of data base system. It uses a file structure that can be visualized as a table with columns for variables (called fields) and rows (records) for values of the variables. The structure for each data base file is created by naming the fields, defining their type (character or numeric) and their size (number of characters or digits and decimal places). Under dBASE II, only 32 fields per file can be used and several data base files were used for the BORDBM package.

8. A diagram of the files for BORDBM is shown in Figure 1. The type of data stored in each file is shown in Figure 2. General information for the boring is stored in the first file (BORMAIN.DBF) while specific data of the types shown in Figure 2 is stored in the other files. The data types are very similar to those shown in Table 1 of Instruction Report GL-84-1.* In both the time-sharing version and the micro version depths can be entered and converted to elevation when the top of hole elevation has been stored. However, in the time-sharing version, only elevations are stored; whereas, in the micro version both depths and elevations are stored.

Data Entry

9. Data entry makes use of the full-screen editing feature of dBASE II that allows a form to be shown on the monitor screen and lets the user fill in the blanks. The data entry segment of BORDBM is menu driven. The main menu selections and data entry submenu for selection 2 are shown in Figure 3.

10. When a new boring is entered, the boring number is checked for duplicates in the data base. If duplicates occur, the user is given the option of seeing the project and site names and project description or reentering a different boring number. A unique system identification number (SID) is automatically assigned to each new boring and after the boring information is entered, key information is copied to a special data base

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* William E. Strohm, Jr. and John B. Palmerton. 1984. "Boring Information and Subsurface Data Base Package: User's Guide, Instruction Report GL-84-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Mississippi.

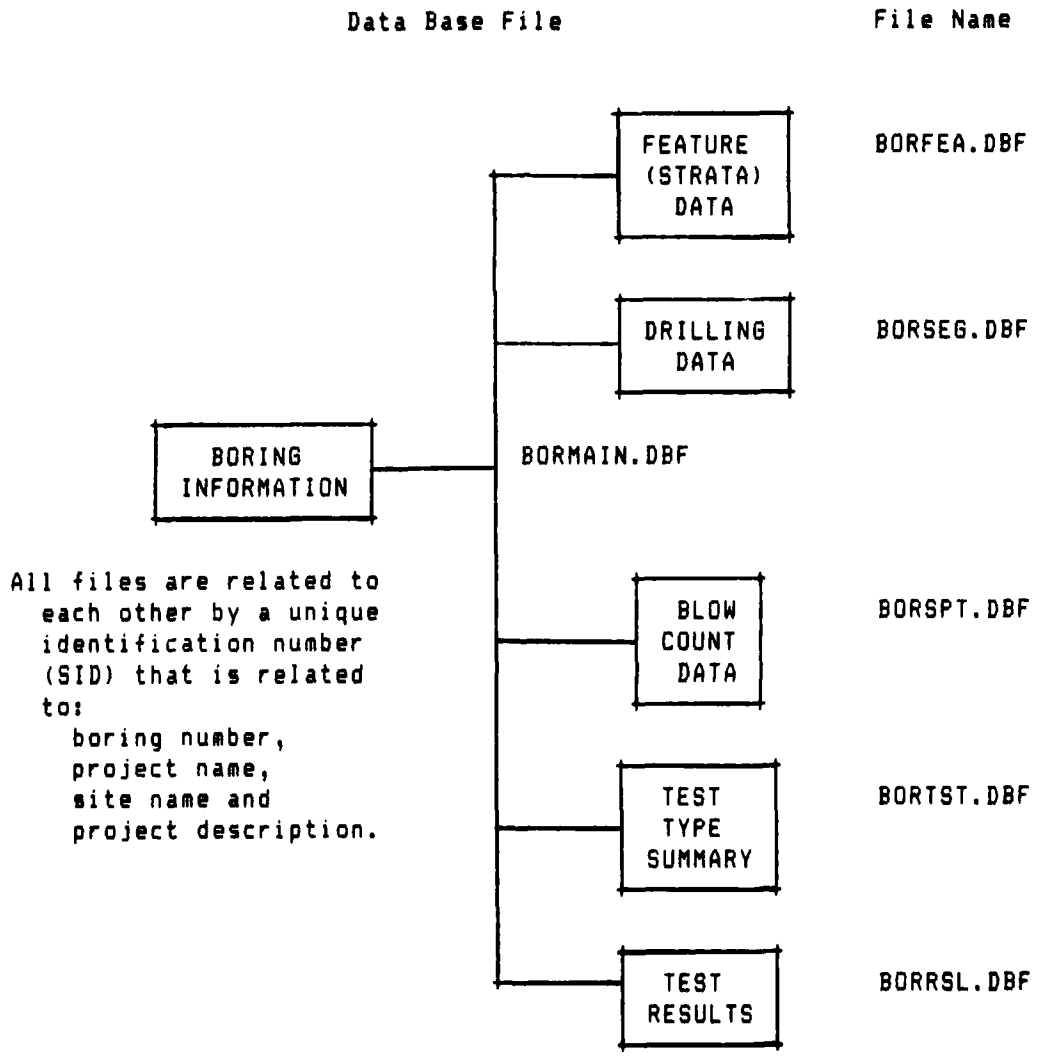

Figure 1. Diagram of data base files for BORDBM

STRUCTURE FOR FILE: C:BORMAIN .DBF
NUMBER OF RECORDS: 00044
DATE OF LAST UPDATE: 06/10/85
PRIMARY USE DATABASE

FLD	NAME	TYPE	WIDTH	DEC
001	BORID	C	010	
002	SID	N	005	
003	CLASS	C	010	
004	REMARKS	C	040	
005	AUTHOR	C	010	
006	PROJ:NAME	C	040	
007	SITE:NAME	C	040	
008	PROJ:DESC	C	025	
009	LAT	N	009	002
010	LONG	N	010	002
011	ACCUR	N	001	
012	REF	C	015	
013	LOC:NS	N	010	002
014	LOC:EW	N	010	002
015	LOC:ACCUR	N	001	
016	LOC:REF	C	010	
017	DATE	C	010	
018	DRILLER	C	020	
019	INSP	C	015	
020	LOC:BLOG	C	010	
021	LOC:DLOG	C	010	
022	LOC:SAM	C	020	
023	DATA:STAT	C	010	
024	HOLE:STAT	C	010	
025	PURPOSE	C	020	
026	TOP:HOLE	N	008	002
027	EL:ACCUR	N	001	
028	DEPTH	N	007	002
029	DAYS:DRIL	N	004	002
** TOTAL **			00392	

STRUCTURE FOR FILE: C:BORFEA .DBF
NUMBER OF RECORDS: 00490
DATE OF LAST UPDATE: 06/10/85
PRIMARY USE DATABASE

FLD	NAME	TYPE	WIDTH	DEC
001	BORID	C	010	
002	SID	N	005	
003	FEAT:NAME	C	010	
004	FEA:DEPTH	N	007	002
005	FEAT:ELEV	N	008	002
006	FEAT:DATE	C	010	
007	FEAT:DESC	C	030	
** TOTAL **			00081	

Legend

C = Character
N = Numeric
DEC = Decimal Places

STRUCTURE FOR FILE: C:BORSEG .DBF
NUMBER OF RECORDS: 00045
DATE OF LAST UPDATE: 03/28/85
PRIMARY USE DATABASE

FLD	NAME	TYPE	WIDTH	DEC
001	BORID	C	010	
002	SID	N	005	
003	BOR:TOOL	C	010	
004	BOR:SIZE	C	005	
005	BOR:DEPTH	N	007	002
006	BOR:ELEV	N	008	002
** TOTAL **			00046	

STRUCTURE FOR FILE: C:BORSPT .DBF
NUMBER OF RECORDS: 00355
DATE OF LAST UPDATE: 03/28/85
PRIMARY USE DATABASE

FLD	NAME	TYPE	WIDTH	DEC
001	BORID	C	010	
002	SID	N	005	
003	BLO:DEPTH	N	007	002
004	BLOW:ELEV	N	008	002
005	BLOW:CTS	C	010	
006	BLOW:RMKS	C	020	
** TOTAL **			00061	

STRUCTURE FOR FILE: C:BORTST .DBF
NUMBER OF RECORDS: 00104
DATE OF LAST UPDATE: 03/21/85
PRIMARY USE DATABASE

FLD	NAME	TYPE	WIDTH	DEC
001	BORID	C	010	
002	SID	N	005	
003	TYP:NAME	C	010	
004	TYP:NUM	C	003	
005	TYP:LOC	C	010	
** TOTAL **			00039	

STRUCTURE FOR FILE: C:BORRSL .DBF
NUMBER OF RECORDS: 00205
DATE OF LAST UPDATE: 03/29/85
PRIMARY USE DATABASE

FLD	NAME	TYPE	WIDTH	DEC
001	BORID	C	010	
002	SID	N	005	
003	TEST:NAME	C	010	
004	TEST:DATE	C	010	
005	TEST:MAT	C	010	
006	TST:DEPTH	N	007	002
007	TEST:ELEV	N	008	002
008	TEST:RES1	C	015	
009	TEST:RES2	C	015	
010	TEST:RES3	C	015	
011	TEST:RES4	C	015	
012	REMARKS	C	020	
** TOTAL **			00141	

Figure 2. Structure for BORDBM data base files

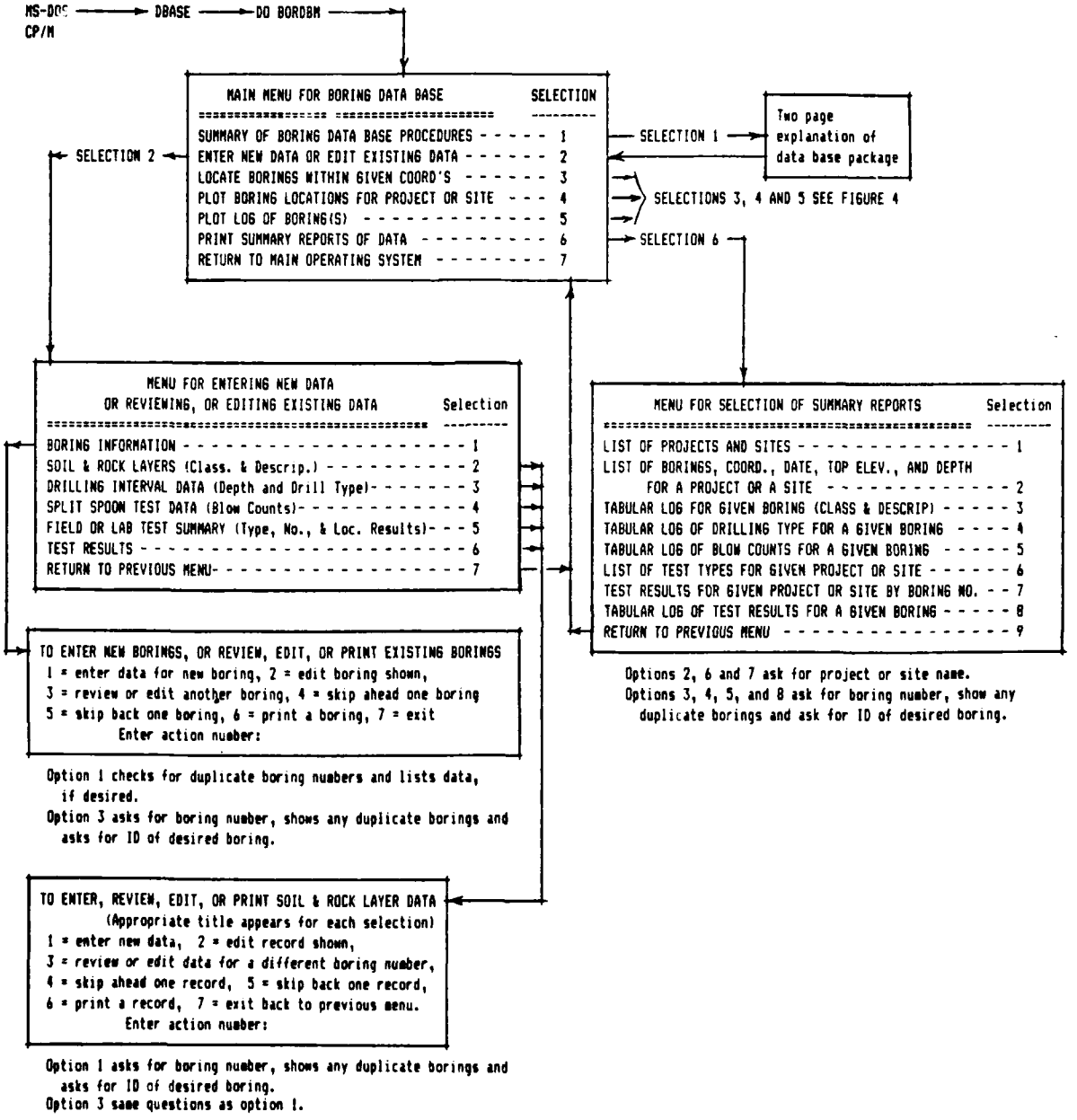

Figure 3. Schematic of BORDBM menu options

file (BORID.DBF) that is used to find and list duplicate borings. Once a new boring is entered, its number should not be changed if supplementary data such as blow count data has been entered. If a boring number is changed in the boring information file, the number is not automatically changed in any of the supplementary files.

11. When other data for a boring are entered, the boring number is asked for and checked. If duplicate numbers exist, the project and site data are shown and the user is asked for the identification number (SID) of the desired boring. If the entered boring number is not found, the user is informed and given the option of reentering the number or returning to the main menu. Thus, supplementary data for a boring cannot be entered until general information for the boring has been entered. The boring number and unique identification number are automatically stored and shown on each new data screen form for supplementary data. Also, when depth data are entered, they are used with the top of hole elevation to automatically calculate and store elevation data.

12. Examples of the data entry forms and data entry are shown in Appendix A. Each data form constitutes a record for the particular data file. Data can be edited (except for boring and SID numbers and elevation data) during data entry or any time after entry is completed. If a depth value is edited, the elevation value will automatically be changed. However, there are no menu options for deleting data records. Record deletion would require reindexing of data files and would take an unacceptably long time. Indexed data files are used to rapidly find desired data. If records must be deleted, then special instructions in Appendix B must be followed.

Data Storage

13. All data entered are stored in the appropriate file. An index file is used with each data file to keep the data ordered by boring number, and in some cases by SID or project and site name plus other variables, such as coordinates. The use of index files speeds up the operation of the boring data package, but requires some additional disk storage space.

14. If the BORDBM programs and data files are on one 5-1/4 in. floppy disk, there is enough space for about 50 borings, assuming that each boring requires about 5,260 bytes (based on data for 44 borings used during data base development). However, on a machine with a 10-megabyte hard disk, 500 borings would require some 2.63 megabytes or 26 percent of the hard disk space. In addition, the package would operate much faster. Thus, a microcomputer with a 10-megabyte hard disk is recommended.

PART III: DATA RETRIEVAL AND DISPLAY

15. Data retrieval and display are done automatically using the selections shown on the menus in Figures 3 and 4. The selections for summary reports are show on the menu in Figure 3 and the selections for locating and plotting borings are shown in Figure 4. Examples of these selections are shown in Appendix C.

Summary Reports

16. The summary report selections are keyed to a project or site name or to a boring number. Some users may want to use the project name for a building type and the site name for a military base, while others may want to use the site name for a location under a general project name. When a project name is entered in selections 6 through 8 of the menu for reports in Figure 3, all data for the project name are listed and the site names are noted on the summary. When a site name is entered, all data for the site are listed and project names are noted. For selections 3 through 5 on the tabular logs, both the project and site names are listed.

Locating and Plotting Borings

17. The options for locating and plotting borings shown in Figure 4 are generally self-explanatory. A few important points about the programs for these options are mentioned below.

Locating borings

18. The two sets of north-south and east-west coordinates, required in selection 3 for locating borings, can be in any order. The program finds the maximum and minimum values.

Plotting locations

19. The plot of boring locations (selection 4) sets the scale to 1 in.* = 400; 600; 800; 1,000; 1,200; 1,500; 1,800; or 2,000 ft, depending on the maximum and minimum values of the coordinates. If a scale greater than 2,000 ft is required, the user is notified that the scale is too small and map cannot be drawn. Letters are used to show locations (A through Z, then a through z, and finally 0 through 9) to allow as many borings as

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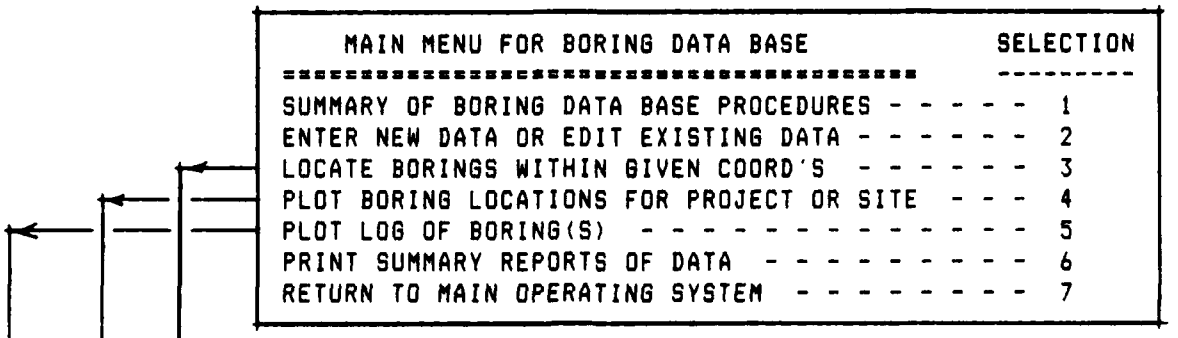
* A table of factors for converting non-SI units of measurement to SI(metric) units is presented on page 3.



Selection 3, LOCATE BORINGS:

Asks for two pairs of NS and EW coordinates.
Lists borings and coordinates on screen and asks if printed table wanted.
Asks if plot of boring locations wanted.

Selection 4, PLOT BORING LOCATIONS:

Asks for project or site name and if printer has wide paper; selects scale to fit data.

Selection 5, PLOT LOG OF BORING(S):

```
BORING LOG PLOT PROGRAM FOR ONE TO THREE LOGS PER SHEET
  ON AN EPSON OR COMPATIBLE DOT MATRIX PRINTER
Enter the number of borings to plot: 1, 2, or 3
  (14-in paper for 3): 3
DOES PRINTER HAVE 14-IN WIDE PAPER, Y OR N: N
  CAN ONLY PLOT TWO BORINGS ON 8-1/2 IN. PAPER.
    Enter the boring number(s) when asked.

Boring numbers asked for, any duplicates are shown
and boring ID of desired boring requested.

Once borings entered, following shown:

  BORING NUMBERS AND DEPTHS ARE:
       BORING NO.          DEPTH, FT.
       CS-4                     36.00
       CS-6                     25.50


Options for vertical scale  are:  5 ft/in (max boring depths <   40 ft),
                                 10 ft/in (max boring depths <   80 ft),
                                 20 ft/in (max boring depths <  160 ft),
                                 30 ft/in (max boring depths <  240 ft),

       ENTER CHOICE:  5, 10, 20, OR 30: 5
```

Figure 4. Options for locating and plotting borings

possible to be shown (a maximum of 62 on one plot). If borings are too close or have the same coordinates, they are noted with the same location letter in the listing at the bottom of the map.

Boring logs

20. The boring log plot (selection 5) shows the feature (strata) name and description and plots these items to the vertical scale selected by the user. An example of the selection process is shown in Figure 4. The limitations of the vertical scale options and the need to ensure that no data are skipped require that all data with an elevation greater than each line elevation be plotted in sequence. Thus when data elevations are closely spaced, the true vertical location may be lower than it should be until a gap in the elevation of data occurs.

APPENDIX A

EXAMPLES OF DATA ENTRY

Notes:

1. One or two screens are shown on a page.
2. User input is circled.
3. Other notations are boxed.

```
     MAIN MENU FOR BORING DATA BASE          SELECTION
=========================================    ---------
SUMMARY OF BORING DATA BASE PROCEDURES  - - -   1

ENTER NEW DATA OR EDIT EXISTING DATA  - - - -   2

LOCATE BORINGS WITHIN GIVEN COORD'S - - - - -   3

PLOT BORING LOCATIONS FOR PROJECT OR SITE - -   4

PLOT LOG OF BORING(S) - - - - - - - - - - - -   5

PRINT SUMMARY REPORTS OF DATA - - - - - - - -   6

EXIT TO MAIN OPERATING SYSTEM - - - - - - - -   7

                Enter Selection          :(1)
```

This boring data base package, called BORDBM, uses menus to provide the following options:

a. Data entry and editing.
b. List of borings bounded by two sets of given coordinates.
c. Plot of boring locations on dot matrix printer.
d. Plot of boring logs on dot matrix printer.
e. Various summary reports.

Data entry and editing are divided into six catagories:

a. Boring information (stored in BORMAIN.DBF),
b. Drilling interval data (BORSEG.DBF),
c. Class. & descr. of soil and rock layers (BORFEA.DBF),
d. Split spoon test data (BORSPT.DBF),
e. Summary of test types (BORTST.DEF),
f. Test results (BORRSL.DBF).

One or more index files are used with the main files to reduce the time for locating data. A special file (BORSID.DBF plus index files) is used to keep track of borings and list pertinent data for duplicate borings.

Hit any key to continue.

WAITING

Identical boring numbers can be used for different projects, sites, or project descriptions, since a unique number is automatically assigned to each new boring entered into the data base. When a new boring is entered, its number is checked and if duplicate numbers exist the user can chose to see a list of the project name, site name and project description. When other data is entered for a boring, the user is asked for the boring number and asked to select the boring system identification (SID), if duplicate boring numbers exist. Thus, boring information should be entered before other data for that boring. Once the top of hole elevation is entered, depths can be entered for other data, since depths are automatically stored and used to calculate elevations using the entered depth and the top of hole elevation.

This package is identical to the boring data base under System 2000 on the Corps-wide time sharing system operated by Control Data Corp. (CDC). A transfer program package is available for transfering data retrieved from System 2000 to this dBase II software package.

Hit any key to continue

WAITING

```
      MAIN MENU FOR BORING DATA BASE          SELECTION
=========================================    ----------
SUMMARY OF BORING DATA BASE PROCEDURES - - -    1

ENTER NEW DATA OR EDIT EXISTING DATA - - - - -  2

LOCATE BORINGS WITHIN GIVEN COORD'S - - - - - -  3

PLOT BORING LOCATIONS FOR PROJECT OR SITE - - -  4

PLOT LOG OF BORING(S) - - - - - - - - - - - -  5

PRINT SUMMARY REPORTS OF DATA - - - - - - - -  6

EXIT TO MAIN OPERATING SYSTEM - - - - - - - -  7

                Enter Selection          :2
```

```
          MENU FOR ENTERING NEW DATA
      OR REVIEWING, OR EDITING EXISTING DATA          Selection
=================================================    ----------
BORING INFORMATION - - - - - - - - - - - - - - - - - - 1

SOIL & ROCK LAYERS (Class. & Descrip.) - - - - - - - - - 2

DRILLING INTERVAL DATA (Depth and Drill Type)- - - - - - 3

SPLIT SPOON TEST DATA (Blow Counts)  - - - - - - - - - - 4

FIELD OR LAB TEST SUMMARY (Type, No., & Loc. Results)- - 5

TEST RESULTS - - - - - - - - - - - - - - - - - - - - - 6

RETURN TO PREVIOUS MENU  - - - - - - - - - - - - - - - 7

              Enter Selection          :1
```

```
   COPY OF BORING INFORMATION FOR LAST BORING ENTERED
            Hole No.: CS-2              Hole ID:   496    Class: CS
Remarks:                                            Author: HUDAK

Project Name: APPROACH LIGHTING SYSTEM
Site Name: ROB
Project Description: MIL 12504 FY86

Latitude:       0.00   Longitude:        0.00    Accur: 0       Ref:
Loc NS:  968600.00     Loc EW:  672220.00     Accur: 1         Ref: GA
Date: 08/14/1984  Driller: JUSTISS                 Inspector: GRIFFIN

Loc Bor Log: GS84          Loc Drill Log:
Loc Samples: SAD LAB                        Data Status: C
Purpose: FE

Top of Hole Elev:   264.80      Elev Accur: 2          Depth:   12.00
Days to Drill Hole: 1.00
-------------------------------------------------------------------------
     TO ENTER NEW BORINGS, OR REVIEW, EDIT, OR PRINT EXISTING DATA:
      1 = enter data for new boring, 2 = edit boring shown above,
      3 = review or edit another boring, 4 = skip ahead one boring
      5 = skip back one boring, 6 = print a boring, 7 = exit
           Enter action number: 3


Enter Boring Number      : a-4
```

```
  No. of duplicate boring numbers =          3
     NOTE BORING ID WHEN YOU SEE THE ONE YOU WANT.
  Boring No::A-4       :
  Project :ADS                                        :
  Site :HUN                                     :
  Project Description :LI184,FY80               :
  Boring ID:  166:

  Boring No::A-4       :
  Project :COM                                        :
  Site :ROB                                     :
  Project Description :LI10625,FY84             :
  Boring ID:  398:

  Boring No::A-4       :
  Project :TES                                        :
  Site :BEN                                     :
  Project Description :LI396,FY85               :
  Boring ID:  416:
Enter the boring ID for the boring you want. :398


     COPY OF BORING INFORMATION FOR SELECTED BORING
            Hole No.: A-4              Hole ID:   398    Class: AP
  Remarks:                                          Author: TRULUCK

  Project Name: COM
  Site Name: ROB
  Project Description: LI10625,FY84

  Latitude:      0.00   Longitude:       0.00    Accur: 0       Ref:
  Loc NS:  945420.00    Loc EW:  678790.00    Accur: 5         Ref: GA
  Date: 09/20/1982  Driller: MAULDEN              Inspector: DELANO

  Loc Bor Log: G573          Loc Drill Log:
  Loc Samples:                              Data Status: C
  Purpose: FE

  Top of Hole Elev:   287.80      Elev Accur: 1          Depth:   10.00
  Days to Drill Hole: 1.00
  ------------------------------------------------------------------

       TO ENTER NEW BORINGS, OR REVIEW, EDIT, OR PRINT EXISTING DATA:
        1 = enter data for new boring, 2 = edit boring shown above,
        3 = review or edit another boring, 4 = skip ahead one boring
        5 = skip back one boring, 6 = print a boring, 7 = exit
             Enter action number:1
```

```
Enter Boring Number      :a-6

   No. of duplicate boring numbers =          3
Do you need project info. for duplicate borings? Enter Y or N :y


  Boring No::A-6       :
  Project :ADS                                    :
  Site :HUN                                  :
  Project Description :LI184,FY80            :
  Boring ID:  168:

  Boring No::A-6       :
  Project :COM                                    :
  Site :ROB                                  :
  Project Description :LI10625,FY84          :
  Boring ID:  400:

  Boring No::A-6       :
  Project :TES                                    :
  Site :BEN                                  :
  Project Description :LI396,FY85            :
  Boring ID:  418:
  Do you want to reenter boring number? Enter Y or N :y


Enter Boring Number      :a-15
```

```
                        DATA ENTRY FOR NEW BORING
Use arrow keys to move around form, or CTRL E = up, CTRL X = down
 CTRL S = left, CTRL D = right, RETURN to skip down,
   and CTRL C to skip out of the form and end.

            Hole No.:A-15       :     Hole ID:   498      Class:          :
 Remarks:                                          :  Author:          :
 Project Name:                                        :
 Site Name:                                          :
 Project Description:                              :
 Latitude:          :   Longitude:          :    Accur: :  Ref:              :
 Loc NS:            :   Loc EW:             :    Accur: :        Ref:        :
 Date:              :  Driller:                      :  Inspector:           :
 Loc Bor Log:       :    Loc Drill Log:          :
 Loc Samples:                    :         Data Status:          :
 Purpose:                       :
 Top of Hole Elev:          :      Elev Accur: :             Depth:       :
 Days to Drill Hole:     :
```

Changed hole number and filled in the rest of the form,

```
                        DATA ENTRY FOR NEW BORING
Use arrow keys to move around form, or CTRL E = up, CTRL X = down
 CTRL S = left, CTRL D = right, RETURN to skip down,
   and CTRL C to skip out of the form and end.

            Hole No.:dh 1633    :     Hole ID:   498      Class:Drill Hole:
 Remarks:Illustration of boring data entry        :  Author:Strohm    :
 Project Name:Any Project for illustration.          :
 Site Name:Any site                                 :
 Project Description:Any description you like :
 Latitude:      0.00:   Longitude:      0.00:    Accur:0:  Ref:None           :
 Loc NS:1234567.33:    Loc EW: 444567.91:    Accur:4:        Ref:Made up    :
 Date:03/22/1985:  Driller:L. Madeup            :  Inspector:R. Expert      :
 Loc Bor Log:Not made  :    Loc Drill Log:WESGR-G   :
 Loc Samples:In the lab           :         Data Status:Incomplete:
 Purpose:Test of data storage:
 Top of Hole Elev: 3456.77:      Elev Accur:9:             Depth: 234.56:
 Days to Drill Hole:3.50:
 ------------------------------------------------------------------------

       TO ENTER NEW BORINGS, EDIT, OR PRINT EXISTING DATA
     1 = enter data for new boring, 2 = edit boring just entered
     3 = review or edit another boring, 4 = skip ahead one boring
     5 = skip back one boring, 6 = print a boring, 7 = exit
          enter action number:2
```

```
                    FOR EDITING OF BORING INFORMATION
Use arrow keys to move around form, or CTRL E = up, CTRL X = down
 CTRL S = left, CTRL D = right, RETURN to skip down,
   and CTRL C to skip out of the form and end.

          Hole No.:dh 1633    :     Hole ID:   498      Class:Drill Hole:
 Remarks:Illustration of boring data entry       :  Author:Strohm     :
 Project Name:Any Project for illustration.          :
 Site Name:Any site                                  :
 Project Description:Any description you like :
 Latitude:      0.00:   Longitude:      0.00:    Accur:0:  Ref:None           :
 Loc NS:1234567.33:    Loc EW: 444567.91:    Accur:4:         Ref:Made up    :
 Date:03/22/1985:  Driller:L. Madeup           :  Inspector:R. Expert       :
 Loc Bor Log:Not made  :    Loc Drill Log:WESGR-G    :
 Loc Samples:In the lab          :          Data Status:Incomplete:
 Purpose:Test of data storage:
 Top of Hole Elev: 3456.77:      Elev Accur:9:             Depth: 234.56:
 Days to Drill Hole:3.50:
```


```
                    FOR EDITING OF BORING INFORMATION
Use arrow keys to move around form, or CTRL E = up, CTRL X = down
 CTRL S = left, CTRL D = right, RETURN to skip down,
   and CTRL C to skip out of the form and end.

          Hole No.:dh 1633    :     Hole ID:   498      Class:Drill Hole:
 Remarks:Illustration of boring data entry       :  Author:Strohm     :
 Project Name:Any Project for illustration.          :
 Site Name:Any site                                  :
 Project Description:Any description you like :
 Latitude:      0.00:   Longitude:      0.00:    Accur:0:  Ref:None           :
 Loc NS:1234567.33:    Loc EW: 444567.91:    Accur:4:         Ref:Made up    :
 Date:03/22/1985:  Driller:L. Madeup           :  Inspector:R. Expert       :
 Loc Bor Log:Not made  :    Loc Drill Log:WESGR-G    :
 Loc Samples:In the lab          :          Data Status:Incomplete:
 Purpose:Test of data storage:
 Top of Hole Elev: 3456.77:      Elev Accur:9:             Depth: 234.56:
 Days to Drill Hole:3.50:
```


```
-------------------------------------------------------------------
      TO ENTER NEW BORINGS, EDIT, OR PRINT EXISTING DATA
     1 = enter data for new boring, 2 = edit boring just entered
     3 = review or edit another boring, 4 = skip ahead one boring
     5 = skip back one boring, 6 = print a boring, 7 = exit
          enter action number: 7
```

```
          MENU FOR ENTERING NEW DATA
      OR REVIEWING, OR EDITING EXISTING DATA          Selection
 ================================================     ---------
 BORING INFORMATION - - - - - - - - - - - - - - - - - - 1

 SOIL & ROCK LAYERS (Class. & Descrip.) - - - - - - - - - 2

 DRILLING INTERVAL DATA (Depth and Drill Type)- - - - - - 3

 SPLIT SPOON TEST DATA (Blow Counts)  - - - - - - - - - - 4

 FIELD OR LAB TEST SUMMARY (Type, No., & Loc. Results)- - 5

 TEST RESULTS - - - - - - - - - - - - - - - - - - - - - - 6

 RETURN TO PREVIOUS MENU  - - - - - - - - - - - - - - - - 7

          Enter Selection      :2

   LAST SOIL OR ROCK LAYER CLASS. & DESCR. RECORD ENTERED

          Hole No.: A-6          Hole ID:   168

Depth to top of strata:  123.00      Elev at top of strata:   -83.70

Soil classification or rock name: TEST CL      Date: NONE

Description of strata: TEST OF ADDING NEW FEAT REC.

-------------------------------------------------------------------

TO ENTER, REVIEW, EDIT, OR PRINT SOIL & ROCK LAYER DATA
  1 = enter new data,  2 = edit record shown above
  3 = review or edit data for a different boring number,
  4 = skip ahead one record,  5 = skip back one record
  6 = print a record,  7 = exit back to previous menu.
          ENTER ACTION NUMBER:5
```

COPY OF SELECTED SOIL OR ROCK LAYER CLASS. & DESCR. RECORD

Hole No.: A-1 Hole ID: 163

Depth to top of strata: 0.00 Elev at top of strata: 39.80

Soil classification or rock name: SM Date:

Description of strata: BR T SI FIN SD RTS MST

TO ENTER, REVIEW, EDIT, OR PRINT SOIL & ROCK LAYER DATA
1 = enter new data, 2 = edit record shown above
3 = review or edit data for a different boring number,
4 = skip ahead one record, 5 = skip back one record
6 = print a record, 7 = exit back to previous menu.
ENTER ACTION NUMBER: 7

```
          MENU FOR ENTERING NEW DATA
     OR REVIEWING, OR EDITING EXISTING DATA          Selection
 ================================================    ---------
 BORING INFORMATION - - - - - - - - - - - - - - - - - - - 1

 SOIL & ROCK LAYERS (Class. & Descrip.) - - - - - - - - - - 2

 DRILLING INTERVAL DATA (Depth and Drill Type)- - - - - - - 3

 SPLIT SPOON TEST DATA (Blow Counts)  - - - - - - - - - - - 4

 FIELD OR LAB TEST SUMMARY (Type, No., & Loc. Results)- - - 5

 TEST RESULTS - - - - - - - - - - - - - - - - - - - - - - - 6

 RETURN TO PREVIOUS MENU  - - - - - - - - - - - - - - - - - 7

            Enter Selection      :3


   LAST DRILLING INTERVAL DATA RECORD ENTERED

            Hole No.: CS-2            Hole ID:   496

Depth to top of interval:    0.00      Elev at top of interval:   264.80

Type of drilling or bit: SS                    Size of hole: STD


------------------------------------------------------------------
TO ENTER, REVIEW, OR EDIT DRILLING INTERVAL DATA
  1 = enter new data,  2 = edit record shown above
  3 = review or edit data for a different boring number,
  4 = skip ahead one record,  5 = skip back one record
  6 = print a record,  7 = exit back to previous menu.
          ENTER ACTION NUMBER:1
```

```
Enter Boring Number      :cs-5


  No. of duplicate boring numbers =          2
     NOTE BORING ID WHEN YOU SEE THE ONE YOU WANT.
  Boring No::CS-5      :
  Project :TES                                          :
  Site :BEN                                        :
  Project Description :LI396,FY85                  :
  Boring ID:  410:

  Boring No::CS-5      :
  Project :COM                                          :
  Site :ROB                                        :
  Project Description :LI10625,FY84                :
  Boring ID:  438:
Enter the boring ID for the boring you want. :438
```

DATA ENTRY FOR DRILLING INTERVAL DATA
Use arrow keys to move around form, or CTRL E = up, CTRL X = down
CTRL S = left, CTRL D = right, RETURN to skip down or show rest of
the form, and CTRL C to skip out of the form and end.

Hole No.: CS-5 Hole ID: 438

Depth to top of interval: :

DATA ENTRY FOR DRILLING INTERVAL DATA
Use arrow keys to move around form, or CTRL E = up, CTRL X = down
CTRL S = left, CTRL D = right, RETURN to skip down or show rest of
the form, and CTRL C to skip out of the form and end.

Hole No.: CS-5 Hole ID: 438

Depth to top of interval:45.0 :

DATA ENTRY FOR DRILLING INTERVAL DATA
Use arrow keys to move around form, or CTRL E = up, CTRL X = down
CTRL S = left, CTRL D = right, RETURN to skip down or show rest of
the form, and CTRL C to skip out of the form and end.

Hole No.: CS-5 Hole ID: 438

Depth to top of interval: 45.00: Elev at top of interval: 243.90

Type of drilling or bit: : Size of hole: :

DATA ENTRY FOR DRILLING INTERVAL DATA
Use arrow keys to move around form, or CTRL E = up, CTRL X = down
CTRL S = left, CTRL D = right, RETURN to skip down or show rest of
the form, and CTRL C to skip out of the form and end.

Hole No.: CS-5 Hole ID: 438

Depth to top of interval: 45.00: Elev at top of interval: 243.90

Type of drilling or bit:3-in. tube: Size of hole:4.0 :

```
    DATA ENTRY FOR DRILLING INTERVAL DATA
Use arrow keys to move around form, or CTRL E = up, CTRL X = down
 CTRL S = left, CTRL D = right, RETURN to skip down or show rest of
   the form, and CTRL C to skip out of the form and end.

            Hole No.: CS-5                 Hole ID:   438

 Depth to top of interval:  45.00:      Elev at top of interval:   243.90

 Type of drilling or bit:3-in. tube:          Size of hole:4.0  :


   Enter more of same data for same hole no., Y or N ?:n

    DATA ENTRY FOR DRILLING INTERVAL DATA
Use arrow keys to move around form, or CTRL E = up, CTRL X = down
 CTRL S = left, CTRL D = right, RETURN to skip down or show rest of
   the form, and CTRL C to skip out of the form and end.

            Hole No.: CS-5                 Hole ID:   438

 Depth to top of interval:  45.00:      Elev at top of interval:   243.90

 Type of drilling or bit:3-in. tube:          Size of hole:4.0  :


 ------------------------------------------------------------------
 TO ENTER, REVIEW, EDIT, OR PRINT DRILLING INTERVAL DATA
   1 = enter new data,  2 = edit record shown above
   3 = review or edit data for a different boring number,
   4 = skip ahead one record,  5 = skip back one record
   6 = print a record,  7 = exit back to previous menu.
           ENTER ACTION NUMBER:7
```

```
          MENU FOR ENTERING NEW DATA
     OR REVIEWING, OR EDITING EXISTING DATA          Selection
=============================================        ---------
BORING INFORMATION - - - - - - - - - - - - - - - - - - - - 1

SOIL & ROCK LAYERS (Class. & Descrip.) - - - - - - - - - - 2

DRILLING INTERVAL DATA (Depth and Drill Type)- - - - - - - 3

SPLIT SPOON TEST DATA (Blow Counts)  - - - - - - - - - - - 4

FIELD OR LAB TEST SUMMARY (Type, No., & Loc. Results)- - - 5

TEST RESULTS - - - - - - - - - - - - - - - - - - - - - - - 6

RETURN TO PREVIOUS MENU  - - - - - - - - - - - - - - - - - 7

          Enter Selection      :4


  LAST BLOW COUNT RECORD ENTERED

          Hole No.: CS-5              Hole ID:   438

Depth for blow count:   37.50      Elev of blow count:   251.40

Blow count, N value:    78

Remarks for blow count:


-------------------------------------------------------------
TO ENTER, REVIEW, OR EDIT SPLIT SPOON TEST DATA
  1 = enter new data,  2 = edit record shown above
  3 = review or edit data for a different boring number,
  4 = skip ahead one record,  5 = skip back one record
  6 = print a record,  7 = exit back to previous menu.
          ENTER ACTION NUMBER:7
```

```
                MENU FOR ENTERING NEW DATA
          OR REVIEWING, OR EDITING EXISTING DATA          Selection
 ==========================================================  ---------

 BORING INFORMATION - - - - - - - - - - - - - - - - - - - - - 1

 SOIL & ROCK LAYERS (Class. & Descrip.) - - - - - - - - - - - 2

 DRILLING INTERVAL DATA (Depth and Drill Type)- - - - - - - - 3

 SPLIT SPOON TEST DATA (Blow Counts)  - - - - - - - - - - - - 4

 FIELD OR LAB TEST SUMMARY (Type, No., & Loc. Results)- - - - 5

 TEST RESULTS - - - - - - - - - - - - - - - - - - - - - - - - 6

 RETURN TO PREVIOUS MENU  - - - - - - - - - - - - - - - - - - 7

                Enter Selection      (5)


    LAST FIELD OR LAB TEST SUMMARY RECORD ENTERED

              Hole No.: CS-5              Hole ID:   438

Name of test: SI 304

Number of tests:              Location of data: GS73


-------------------------------------------------------------------

TO ENTER, REVIEW, EDIT, OR PRINT TEST SUMMARY INFO
  1 = enter new data,  2 = edit record shown above
  3 = review or edit data for a different boring number,
  4 = skip ahead one record,  5 = skip back one record
  6 = print a record,  7 = exit back to previous menu.
              ENTER ACTION NUMBER:(7)
```

```
          MENU FOR ENTERING NEW DATA
     OR REVIEWING, OR EDITING EXISTING DATA          Selection
=================================================    ---------
BORING INFORMATION - - - - - - - - - - - - - - - - - - - - 1

SOIL & ROCK LAYERS (Class. & Descrip.) - - - - - - - - - - 2

DRILLING INTERVAL DATA (Depth and Drill Type)- - - - - - - 3

SPLIT SPOON TEST DATA (Blow Counts)  - - - - - - - - - - - 4

FIELD OR LAB TEST SUMMARY (Type, No., & Loc. Results)- - - 5

TEST RESULTS - - - - - - - - - - - - - - - - - - - - - - - 6

RETURN TO PREVIOUS MENU  - - - - - - - - - - - - - - - - - 7

          Enter Selection      :6


 LAST TEST RESULTS RECORD ENTERED

          Hole No.: CS-5          Hole ID:   438

Test Name: SI 304          Date: 11/05/1982        Material: SC

Depth:     5.00                              Elevation:  283.90

Result 1: W18.7                 Result 3:

Result 2:                       Result 4:

Remarks:

-------------------------------------------------------------------
TO ENTER, REVIEW, EDIT, OR PRINT TEST RESULTS
  1 = enter new data,  2 = edit record shown above
  3 = review or edit data for a different boring number,
  4 = skip ahead one record,  5 = skip back one record
  6 = print a record,  7 = exit back to previous menu.
          ENTER ACTION NUMBER:4
```

COPY OF SELECTED TEST RESULTS RECORD

Hole No.: CS 1 Hole ID: 162

Test Name: SI206 Date: 05/31/1979 Material: [SPSM]

Depth: 1.50 Elevation: 34.79

Result 1: 1/100 Result 3: 4/95

Result 2: 2/98 Result 4: 6/78

Remarks:

TO ENTER, REVIEW, OR EDIT TEST RESULTS
1 = enter new data, 2 = edit record shown above
3 = review or edit data for a different boring number,
4 = skip ahead one record, 5 = skip back one record
6 = print a record, 7 = exit back to previous menu.
ENTER ACTION NUMBER: 7

APPENDIX B

SPECIAL INSTRUCTIONS FOR RECORD DELETION

1. Deletion of records from data base files requires that the user be familiar with the several dBASE II commands and operations. The two main commands are DELETE and PACK. DELETE marks a record for deletion, while PACK actually deletes the record or records. The following steps are recommended:

a. Call up the appropriate data base file with the USE command (e.g., BORMAIN).

b. Find the record or records for deletion.

c. Set up all index files with the SET INDEX TO command (e.g., SET INDEX TO BORMAINI). See Appendix F, program BORINIT.PRG for index file names.

d. Delete the desired records with the DELETE command (e.g., DELETE RECORD 129 or DELETE NEXT 9 RECORDS).

e. Use the PACK command to delete records and reindex files (e.g., PACK). Considerable time may be required if the data base file is large.

2. If records from BORMAIN.DBF (and BORMAINI.NDX) files are deleted, the corresponding records will also have to be deleted from BORSID.DBF and its four index files. Essential data are copied to BORSID.DBF and its index files when a record is edited or added to BORMAIN.DBF.

APPENDIX C

EXAMPLES OF BORING PLOTS AND SUMMARY REPORTS

Notes:

1. One or two screens are shown on a page.
2. User input is circled.

```
      MAIN MENU FOR BORING DATA BASE                    SELECTION
=============================================================
SUMMARY OF BORING DATA BASE PROCEDURES - - - -  1

ENTER NEW DATA OR EDIT EXISTING DATA - - - - -  2

LOCATE BORINGS WITHIN GIVEN COORD'S - - - - - -  3

PLOT BORING LOCATIONS FOR PROJECT OR SITE - - -  4

PLOT LOG OF BORING(S) - - - - - - - - - - - -  5

PRINT SUMMARY REPORTS OF DATA - - - - - - - - -  6

EXIT TO MAIN OPERATING SYSTEM - - - - - - - - -  7

                    Enter Selection          :(3)
    ENTER TWO SETS OF NS,EW COORD. TO DEFINE AREA OF INTEREST.
INPUT FIRST NS COORD.   :(930000)
CORRESPONDING EW COORD.:(660000)
INPUT SECOND NS COORD.  :(970000)
CORRESPONDING EW COORD.:(680000)
```

LIST OF BORINGS IN AREA WITHIN GIVEN COURDINATES

N's COORD:	930000	EW COORD:	660000
	970000		680000

BORING NO.	SID	NS COORD.	EW COORD.
A-5	399	945060.00	678790.00
PROJ: COM			
SITE: ROB			
A-6	400	945060.00	678790.00
PROJ: COM			
SITE: ROB			
A-7	401	945060.00	678790.00
PROJ: COM			
SITE: ROB			
A-8	402	945060.00	678790.00
PROJ: COM			
SITE: ROB			

Hit any key to continue

WAITING

A-9	403	945060.00	678790.00
PROJ: COM			
SITE: ROB			
A-10	404	945060.00	678790.00
PROJ: COM			
SITE: ROB			
A-11	405	945060.00	678790.00
PROJ: COM			
SITE: ROB			
CS-6	393	945420.00	678790.00
PROJ: COM			
SITE: ROB			
CS-7	394	945420.00	678790.00
PROJ: COM			
SITE: ROB			
A-1	395	945420.00	678790.00
PROJ: COM			
SITE: ROB			

Hit any key to continue

WAITING

```
A-2             396   945420.00   678790.00
    PROJ: COM
    SITE: ROB
A-3             397   945420.00   678790.00
    PROJ: COM
    SITE: ROB
A-4             398   945420.00   678790.00
    PROJ: COM
    SITE: ROB
CS-1            434   945420.00   678790.00
    PROJ: COM
    SITE: ROB
CS-2            435   945420.00   678790.00
    PROJ: COM
    SITE: ROB
CS-3            436   945420.00   678790.00
    PROJ: COM
    SITE: ROB
  Hit any key to continue
WAITING



CS-4            437   945420.00   678790.00
    PROJ: COM
    SITE: ROB
CS-5            438   945420.00   678790.00
    PROJ: COM
    SITE: ROB
CS-1            495   968600.00   672220.00
    PROJ: APPROACH LIGHTING SYSTEM
    SITE: ROB
CS-2            496   968600.00   672220.00
    PROJ: APPROACH LIGHTING SYSTEM
    SITE: ROB



DO YOU WANT A PRINTED COPY? ENTER Y OR N:Y
```

LIST OF BORINGS IN AREA WITHIN GIVEN COORDINATES

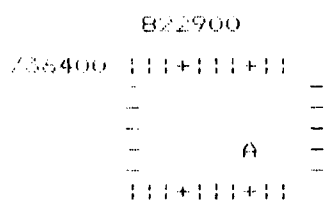
NS COORD: 930000 EW COORD: 660000
970000 680000

BORING NO.	SID	NS COORD.	EW COORD.	PROJECT	SITE
A-5	399	945060.00	678790.00	COM	ROB
A-6	400	945060.00	678790.00	COM	ROB
A-7	401	945060.00	678790.00	COM	ROB
A-8	402	945060.00	678790.00	COM	ROB
A-9	403	945060.00	678790.00	COM	ROB
A-10	404	945060.00	678790.00	COM	ROB
A-11	405	945060.00	678790.00	COM	ROB
CS-6	393	945420.00	678790.00	COM	ROB
CS-7	394	945420.00	678790.00	COM	ROB
A-1	395	945420.00	678790.00	COM	ROB
A-2	396	945420.00	678790.00	COM	ROB
A-3	397	945420.00	678790.00	COM	ROB
A-4	398	945420.00	678790.00	COM	ROB
CS-1	434	945420.00	678790.00	COM	ROB
CS-2	435	945420.00	678790.00	COM	ROB
CS-3	436	945420.00	678790.00	COM	ROB
CS-4	437	945420.00	678790.00	COM	ROB
CS-5	438	945420.00	678790.00	COM	ROB
CS-1	495	968600.00	672220.00	APPROACH LIGHTING SYSTEM	ROB

```
      MAIN MENU FOR BORING DATA BASE                    SELECTION
      ==============================                    =========

      SUMMARY OF BORING DATA BASE PROCEDURES  - - -  1

      ENTER NEW DATA OR EDIT EXISTING DATA  - - - -  2

      LOCATE BORINGS WITHIN GIVEN COORD'S - - - - -  3

      PLOT BORING LOCATIONS FOR PROJECT OR SITE - -  4

      PLOT LOG OF BORING(S) - - - - - - - - - - -  5

      PRINT SUMMARY REPORTS OF DATA - - - - - - -  6

      EXIT TO MAIN OPERATING SYSTEM - - - - - - -  7

                        Enter Selection        :4
   PLOT OF BORING LOCATIONS FOR GIVEN PROJECT OR SITE
DO YOU WANT A PLOT FOR A PROJECT NAME OR SITE NAME? ENTER P OR S:S
ENTER SITE NAME:hunts
  DID NOT FIND YOUR SITE, DO YOU WANT A LIST TO REENTER NAME FROM?
ENTER Y FOR YES AND N FOR NO:y


LIST OF PROJECTS AND SITES IN THE BORING DATA BASE

PROJECT: ADS
SITE:    HUN

PROJECT: APPROACH LIGHTING SYSTEM
SITE:    ROB

PROJECT: COM
SITE:    ROB

PROJECT: TES
SITE:    BEN
```

```
=============================================  ---------
SUMMARY OF BORING DATA BASE PROCEDURES  - - -  1

ENTER NEW DATA OR EDIT EXISTING DATA  - - - -  2

LOCATE BORINGS WITHIN GIVEN COORD'S - - - - -  3

PLOT BORING LOCATIONS FOR PROJECT OR SITE - -  4

PLOT LOG OF BORING(S) - - - - - - - - - - - -  5

PRINT SUMMARY REPORTS OF DATA - - - - - - - -  6

EXIT TO MAIN OPERATING SYSTEM - - - - - - - -  7

                    Enter Selection          :4
   PLOT OF BORING LOCATIONS FOR GIVEN PROJECT OR SITE
DO YOU WANT A PLOT FOR A PROJECT NAME OR SITE NAME? ENTER P OR S:s
ENTER SITE NAME:hunts
  DID NOT FIND YOUR SITE, DO YOU WANT A LIST TO REENTER NAME FROM?
ENTER Y FOR YES AND N FOR NO:y
   PLOT OF BORING LOCATIONS FOR GIVEN PROJECT OR SITE
DO YOU WANT A PLOT FOR A PROJECT NAME OR SITE NAME? ENTER P OR S:p
ENTER PROJECT NAME:ads


DOES YOU PRINTER HAVE WIDE PAPER? Y OR N:n
    This takes a few minutes, so hang tight.
```

PLOT OF BORING LOCATIONS FOR PROJ.: ADS
EAST-WEST COORD. (VERTICAL ORDINATE IS N-S COORD.) SCALE: 1 IN = 400 FT



LEGEND:

POINT NO.	BORING NUMBER	SID SITE:
A	CS-1	162 HUN
A	A-1	163 HUN
A	A-2	164 HUN
A	A-3	165 HUN
A	A-4	166 HUN
A	A-5	167 HUN
A	A-6	168 HUN

NUMBER OF BORINGS = 7

MAIN MENU FOR BORING DATA BASE	SELECTION
SUMMARY OF BORING DATA BASE PROCEDURES	1
ENTER NEW DATA OR EDIT EXISTING DATA	2
LOCATE BORINGS WITHIN GIVEN COORD'S	3
PLOT BORING LOCATIONS FOR PROJECT OR SITE	4
PLOT LOG OF BORING(S)	5
PRINT SUMMARY REPORTS OF DATA	6
EXIT TO MAIN OPERATING SYSTEM	7

Enter Selection :5

```
      BORING LOG PLOT PROGRAM FOR ONE TO THREE LOGS PER SHEET
        ON AN EPSON OR COMPATIBLE DOT MATRIX PRINTER
Enter the number or borings to plot: 1, 2, or 3 (14-in paper for 3):3
DOES PRINTER HAVE 14-IN. WIDE PAPER, Y OR N:y
   Enter the boring number(s) when asked (must be as stored,
     including blanks, e.g. DH 1640; can be in UPPER or lower
     case characters.
    FOR FIRST BORING (hit any key to continue)
WAITING



 Enter Boring Number      :cs-5
```

```
   No. of duplicate boring numbers =          2
      NOTE BORING ID WHEN YOU SEE THE ONE YOU WANT.
   Boring No::CS-5      :
   Project :TES                                          :
   Site :BEN                                          :
   Project Description :LI3%6,FY85                    :
   Boring ID:  410:

   Boring No::CS-5      :
   Project :COM                                          :
   Site :ROB                                          :
   Project Description :LI10625,FY84                  :
   Boring ID:  438:
 Enter the boring ID for the boring you want. :438
    FOR SECOND BORING (hit any key to continue).
WAITING



 Enter Boring Number      :cs-6
```

```
   No. of duplicate boring numbers =          2
      NOTE BORING ID WHEN YOU SEE THE ONE YOU WANT.
   Boring No::CS-6       :
   Project :COM                                              :
   Site :ROB                                                 :
   Project Description :LI10625,FY84                         :
   Boring ID:  393:

   Boring No::CS-6       :
   Project :IES                                              :
   Site :BEN                                                 :
   Project Description :LI396,FY85                           :
   Boring ID:  411:
 Enter the boring ID for the boring you want. :393
    FOR THIRD BORING (hit any key to continue).
WAITING



 Enter Boring Number      :cs-7
```

```
  No. of duplicate boring numbers =          2
     NOTE BORING ID WHEN YOU SEE THE ONE YOU WANT.
  Boring No::CS-7      :
  Project :COM                                          :
  Site :ROB                                        :
  Project Description :LI10625,FY84                :
  Boring ID:  394:

  Boring No::CS-7      :
  Project :TES                                          :
  Site :BEN                                        :
  Project Description :LI396,FY85                  :
  Boring ID:  412:
Enter the boring ID for the boring you want. :394
       CHECKING COMPLETE
```

```
    BORING NUMBERS AND DEPTHS ARE:
         BORING NO.              DEPTH, FT.
         CS-5                       36.00
         CS-6                       36.00
         CS-7                       36.00


 Options for vertical scale are: 5 ft/in (max boring depths <  40 ft),
                                 10 ft/in (max boring depths <  80 ft),
                                 20 ft/in (max boring depths < 160 ft),
                                 30 ft/in (max boring depths < 240 ft).

ENTER CHOICE: 5, 10, 20, OR 30:5

    Printer plot  will take a few minutes, so take 5.
```

Reduced to 65 percent of original size

LOG OF STRATA NAMES AND DESCRIPTIONS. VERTICAL SCALE = 5 FT/IN

CS-5 SID= 438
E-W CORD= 678790.00
N-S CORD= 945420.00
09/17/1982
TOP EL= 288.90 FT
DEPTH= 38.00 FT
DISTANCE = 0 FEET

SC	DK BR F GRA CLY SD
SC	OGN
(SC) SC	(T) OGN-GR
SC	MINOR C GRA
SC	OGN-R,F-MED GRA
SC	F-C GRA
SC	DK R-WHT
SM	R-WHT-OGN,F-C,GRASIYSD,W/CLY
SM WT WT	WHT-PIN F-MED,GRA 72 HOUR DD
SC	PIN-WHT F-MED GRA V CLY SD
BH EL= 252.90	

CS-6 SID= 393
E-W CORD= 678790.00
N-S CORD= 945420.00
09/16/1982
TOP EL= 288.10 FT
DEPTH= 36.00 FT
DISTANCE = 0 FEET

SC	DK BR F GRA CLY SAND
SC (SC)	OGN-GR MED GRA (T-OGN-BR)
SC	ABUNDANT F GVL
SC	ABUNDANT LGE QUARTZ GVL
SM	LT-Y-OGN,F-MED GRA SIY SD
SM	MINOR CLY LENSE
SM	WHT
WT WT	24 HOUR DD
SC	PIN,MED GRA
SM	WHT,F-MED GRA
SM	OGN
BH EL= 252.10	

CS-7 SID= 394
E-W CORD= 678790.00
N-S CORD= 945420.00
09/17/1982
TOP EL= 289.00 FT
DEPTH= 36.00 FT

SC	DK BR F GRA CLY SD
SC (SC)	LT-OGN (T)
SC	F-MED GRA
SC	MINOR COARSE GRA
SC	F-COARSE GRA
SM	DK-R,F-C GRA W/MINOR CL
SM	Y MED GRA
SM	MINOR CLY SEAMS
WT WT SM	72 HOUR DD Y-PIN FIN GRN
SM	MINOR CLY SEAMS
SM	Y-PIN
SM	WHT
SM	PIN-WHT
BH EL= 253.00	

290 280 270 260 250

ELEVATION FEET

```
**************************************************
* PROJ: COM                                      *
* SITE: ROD                                      *
*LOG OF BORINGS CS-5      CS-6      CS-7        *
**************************************************
```

MAIN MENU FOR BORING DATA BASE	SELECTION
SUMMARY OF BORING DATA BASE PROCEDURES	1
ENTER NEW DATA OR EDIT EXISTING DATA	2
LOCATE BORINGS WITHIN GIVEN COORD'S	3
PLOT BORING LOCATIONS FOR PROJECT OR SITE	4
PLOT LOG OF BORING(S)	5
PRINT SUMMARY REPORTS OF DATA	6
EXIT TO MAIN OPERATING SYSTEM	7

Enter Selection :6

MENU FOR SELLCTION OF SUMMARY REPORTS Selection

LIST OF PROJECTS AND SITES - - - - - - - - - - - - - - - - - 1

LIST OF BORINGS, COORD., DATE, TOP ELEV., AND DEPTH
FOR A PROJECT OR A SITE - - - - - - - - - - - - - - - 2

TABULAR LOG FOR GIVEN BORING (CLASS & DESCRIP) - - - - - - 3

TABULAR LOG OF DRILLING TYPE FOR A GIVEN BORING - - - - - 4

TABULAR LOG OF BLOW COUNTS FOR A GIVEN BORING - - - - - - 5

LIST OF TEST TYPES FOR GIVEN PROJECT OR SITE - - - - - - - 6

TEST RESULTS FOR GIVEN PROJECT OR SITE BY BORING NO. - - 7

TABULAR LOG OF TEST RESULTS FOR A GIVEN BORING - - - - - - 8

RETURN TO PREVIOUS MENU - - - - - - - - - - - - - - - - - 9

Enter Selection :1

LIST OF PROJECTS AND SITES IN THE BORING DATA BASE

PROJECT: ADS
SITE: HUN

PROJECT: APPROACH LIGHTING SYSTEM
SITE: ROB

PROJECT: Any Project for illustration.
SITE: Any site

PROJECT: BOGUS PROJECT FOR TESTING
SITE: ANY SITE

PROJECT: COM
SITE: ROB

PROJECT: TES
SITE: BEN

```
      MENU FOR SELECTION OF SUMMARY REPORTS          Selection
=================================================    ---------
LIST OF PROJECTS AND SITES - - - - - - - - - - - - - - - 1

LIST OF BORINGS, COORD., DATE, TOP ELEV., AND DEPTH
      FOR A PROJECT OR A SITE  - - - - - - - - - - - - - 2

TABULAR LOG FOR GIVEN BORING (CLASS & DESCRIP) - - - - - - 3

TABULAR LOG OF DRILLING TYPE FOR A GIVEN BORING  - - - - - 4

TABULAR LOG OF BLOW COUNTS FOR A GIVEN BORING  - - - - - - 5

LIST OF TEST TYPES FOR GIVEN PROJECT OR SITE - - - - - - - 6

TEST RESULTS FOR GIVEN PROJECT OR SITE BY BORING NO. - - 7

TABULAR LOG OF TEST RESULTS FOR A GIVEN BORING - - - - - 8

RETURN TO PREVIOUS MENU  - - - - - - - - - - - - - - - - 9


@ M              Enter Selection     :2
ENTER P TO LIST FOR A PROJECT NAME, OR S TO LIST FOR A SITE:S
ENTER SITE NAME:HUN
```

BORING SUMMARY FOR SITE: HUN

--BORING NO.---	-SID-	--NS COORD--	--EW COORD--	---DATE---	TOP ELEV	DEPTH, FT
A-1	163	736250.00	823000.00	05/14/1979	39.80	10.00
A-2	164	736250.00	823000.00	05/14/1979	37.90	10.00
A-3	165	736250.00	823000.00	05/14/1979	38.20	10.00
A-4	166	736250.00	823000.00	05/14/1979	38.20	10.00
A-5	167	736250.00	823000.00	05/14/1979	38.70	10.00
A-6	168	736250.00	823000.00	05/11/1979	39.30	10.00
CS-1	162	736250.00	823000.00	05/15/1979	36.20	25.50

```
        MENU FOR SELECTION OF SUMMARY REPORTS                Selection
=============================================================  ---------

LIST OF PROJECTS AND SITES - - - - - - - - - - - - - - - - - 1

LIST OF BORINGS, COORD., DATE, TOP ELEV., AND DEPTH
      FOR A PROJECT OR A SITE - - - - - - - - - - - - - - - 2

TABULAR LOG FOR GIVEN BORING (CLASS & DESCRIP) - - - - - - 3

TABULAR LOG OF DRILLING TYPE FOR A GIVEN BORING - - - - - - 4

TABULAR LOG OF BLOW COUNTS FOR A GIVEN BORING - - - - - - - 5

LIST OF TEST TYPES FOR GIVEN PROJECT OR SITE - - - - - - - 6

TEST RESULTS FOR GIVEN PROJECT OR SITE BY BORING NO. - - - 7

TABULAR LOG OF TEST RESULTS FOR A GIVEN BORING - - - - - - 8

RETURN TO PREVIOUS MENU - - - - - - - - - - - - - - - - - 9

            Enter Selection      :3

Enter Boring Number      :A-11
```

TABULAR LOG OF BORING: A-11 SID: 405 TOP ELEV: 287.90
PROJECT: COM
SITE: ROB

ELEVATION	DEPTH, FT	STRATA TYPE	DATE	DESCRIPTION
287.90	0.00	SC		DK OGN F-C GRA CLY SD
286.40	1.50	SC		BR-TAN F GRA
285.40	2.50	SC		OGN-GR VERY CLY
283.90	4.00	SC		OGN F-MED GRA
282.40	5.50	SC		LT-OGN
281.40	6.50	SC		GR-OGN
279.90	8.00	SC		MINOR COARSE GRA
278.90	9.00	SC		OGN
278.90	9.00	WT	09/20/1982	DD,DRY
277.90	10.00	WT	09/21/1982	24 HOUR,DRY
277.90	10.00	BH		

MENU FOR SELECTION OF SUMMARY REPORTS	Selection
LIST OF PROJECTS AND SITES	1
LIST OF BORINGS, COORD., DATE, TOP ELEV., AND DEPTH FOR A PROJECT OR A SITE	2
TABULAR LOG FOR GIVEN BORING (CLASS & DESCRIP)	3
TABULAR LOG OF DRILLING TYPE FOR A GIVEN BORING	4
TABULAR LOG OF BLOW COUNTS FOR A GIVEN BORING	5
LIST OF TEST TYPES FOR GIVEN PROJECT OR SITE	6
TEST RESULTS FOR GIVEN PROJECT OR SITE BY BORING NO.	7
TABULAR LOG OF TEST RESULTS FOR A GIVEN BORING	8
RETURN TO PREVIOUS MENU	9

Enter Selection :4

Enter Boring Number :CS-9

```
   CANNOT LOCATE YOUR BORING NUMBER.

Enter C to continue or S to stop:C
Enter Boring Number     :CS-1
```

```
   No. of duplicate boring numbers =          4
      NOTE BORING ID WHEN YOU SEE THE ONE YOU WANT.
   Boring No::CS-1      :
   Project :ADS                                    :
   Site :HUN                                  :
   Project Description :LI184,FY80            :
   Boring ID:  162:

   Boring No::CS-1      :
   Project :TES                                    :
   Site :BEN                                  :
   Project Description :LI396,FY85            :
   Boring ID:  406:

   Boring No::CS-1      :
   Project :COM                                    :
   Site :ROB                                  :
   Project Description :LI10625,FY84          :
   Boring ID:  434:
         Press any key to continue
WAITING
```

Boring No::CS-1 :
Project :APPROACH LIGHTING SYSTEM :
Site :ROB :
Project Description :MIL 12504 FY86 :
Boring ID: 495:
Enter the boring ID for the boring you want. :434

TABULAR LOG OF DRILLING SEGMENTS

BORING NO.: CS-1 SID: 434 TOP ELEV: 289.50
PROJECT: COM
SITE: ROB

ELEVATION	DEPTH, FT	BORE SIZE	BORE TOOL
289.50	0.00	STD	SS

```
        MENU FOR SELECTION OF SUMMARY REPORTS                Selection
        ====================================================  =========
        LIST OF PROJECTS AND SITES - - - - - - - - - - - - - - - 1

        LIST OF BORINGS, COORD., DATE, TOP ELEV., AND DEPTH
              FOR A PROJECT OR A SITE - - - - - - - - - - - - - - 2

        TABULAR LOG FOR GIVEN BORING (CLASS & DESCRIP) - - - - - - 3

        TABULAR LOG OF DRILLING TYPE FOR A GIVEN BORING - - - - - 4

        TABULAR LOG OF BLOW COUNTS FOR A GIVEN BORING - - - - - - 5

        LIST OF TEST TYPES FOR GIVEN PROJECT OR SITE - - - - - - - 6

        TEST RESULTS FOR GIVEN PROJECT OR SITE BY BORING NO. - - 7

        TABULAR LOG OF TEST RESULTS FOR A GIVEN BORING - - - - - 8

        RETURN TO PREVIOUS MENU - - - - - - - - - - - - - - - - - 9

                    Enter Selection      :5

Enter Boring Number      :a-1
```

```
   No. of duplicate boring numbers =          3
      NOTE BORING ID WHEN YOU SEE THE ONE YOU WANT.
   Boring No::A-1       :
   Project :ADS                                        :
   Site :HUN                                          :
   Project Description :LI184,FY80                    :
   Boring ID:  163:

   Boring No::A-1       :
   Project :COM                                        :
   Site :ROB                                          :
   Project Description :LI10625,FY84                  :
   Boring ID:  395:

   Boring No::A-1       :
   Project :TES                                        :
   Site :BEN                                          :
   Project Description :LI396,FY85                    :
   Boring ID:  413:
 Enter the boring ID for the boring you want. :163
NO DATA FOR THIS BORING, DO YOU WANT TO ENTER ANOTHER? Y OR N:y
```

```
Enter Boring Number      :CS-5




  No. of duplicate boring numbers =          2
     NOTE BORING ID WHEN YOU SEE THE ONE YOU WANT.
  Boring No::CS-5       :
  Project :TES                                        :
  Site :BEN                                          :
  Project Description :LI396,FY85                    :
  Boring ID:  410:

  Boring No::CS-5       :
  Project :COM                                        :
  Site :ROB                                          :
  Project Description :LI10625,FY84                  :
  Boring ID:  438:
Enter the boring ID for the boring you want. :438
```

TABULAR LOG OF BLOW COUNTS

BORING NO.: CS-5 SID: 438 TOP ELEV: 288.90

PROJECT: COM

SITE: ROB

ELEVATION	DEPTH, FT	BLOWS/FT	R E M A R K S
287.40	1.50	10	
285.90	3.00	6	
284.40	4.50	6	
282.90	6.00	15	
281.40	7.50	35	
279.90	9.00	36	
278.40	10.50	62	
276.90	12.00	52	
275.40	13.50	77	
273.90	15.00	37	75
272.40	16.50	37	
270.90	18.00	75	
269.40	19.50	100/0.6	
267.90	21.00	100/0.9	
266.40	22.50	100/0.8	
264.90	24.00	100/0.6	
263.40	25.50	100	
261.90	27.00	97	
260.40	28.50	80	
258.90	30.00	57	
257.40	31.50	70	
255.90	33.00	100/0.9	
254.40	34.50	74	
252.90	36.00	57	
251.40	37.50	78	

```
      MENU FOR SELECTION OF SUMMARY REPORTS          Selection
      ================================================  ---------
      LIST OF PROJECTS AND SITES - - - - - - - - - - - - - - - 1

      LIST OF BORINGS, COORD., DATE, TOP ELEV., AND DEPTH
            FOR A PROJECT OR A SITE  - - - - - - - - - - - - - 2

      TABULAR LOG FOR GIVEN BORING (CLASS & DESCRIP) - - - - - - 3

      TABULAR LOG OF DRILLING TYPE FOR A GIVEN BORING  - - - - - 4

      TABULAR LOG OF BLOW COUNTS FOR A GIVEN BORING  - - - - - - 5

      LIST OF TEST TYPES FOR GIVEN PROJECT OR SITE - - - - - - - 6

      TEST RESULTS FOR GIVEN PROJECT OR SITE BY BORING NO. - - 7

      TABULAR LOG OF TEST RESULTS FOR A GIVEN BORING - - - - - - 8

      RETURN TO PREVIOUS MENU  - - - - - - - - - - - - - - - - - 9


@ M              Enter Selection     :6
ENTER P TO LIST FOR A PROJECT NAME, OR S TO LIST FOR A SITE:S
ENTER SITE NAME:HUN
```

SUMMARY OF TEST TYPES FOR SITE: HUN

	TYPE TEST	NO. TESTS	LOC. RESULTS
BORING NO.: CS-1	SID: 162	PROJ: ADS	
	SI101		GS69E
	SI206		GS69E
	SI304		GS69E
BORING NO.: A-1	SID: 163	PROJ: ADS	
	SI101		GS69E
	SI206		GS69E
	SI304		GS69E
BORING NO.: A-2	SID: 164	PROJ: ADS	
	SI101		GS69E
	SI206		GS69E
	SI304		GS69E
BORING NO.: A-3	SID: 165	PROJ: ADS	
	SI101		GS69E
	SI206		GS69E
	SI304		GS69E
BORING NO.: A-4	SID: 166	PROJ: ADS	
	SI304		GS69E
BORING NO.: A-5	SID: 167	PROJ: ADS	
	SI101		GS69E
	SI206		GS69E
	SI304		GS69E
BORING NO.: A-6	SID: 168	PROJ: ADS	
	SI101		GS69E
	SI206		GS69E
	SI304		GS69E

```
      MENU FOR SELECTION OF SUMMARY REPORTS          Selection
=================================================    ---------
LIST OF PROJECTS AND SITES - - - - - - - - - - - - - - - 1

LIST OF BORINGS, COORD., DATE, TOP ELEV., AND DEPTH
      FOR A PROJECT OR A SITE  - - - - - - - - - - - - - 2

TABULAR LOG FOR GIVEN BORING (CLASS & DESCRIP) - - - - - - 3

TABULAR LOG OF DRILLING TYPE FOR A GIVEN BORING  - - - - - 4

TABULAR LOG OF BLOW COUNTS FOR A GIVEN BORING  - - - - - - 5

LIST OF TEST TYPES FOR GIVEN PROJECT OR SITE - - - - - - - 6

TEST RESULTS FOR GIVEN PROJECT OR SITE BY BORING NO. - - 7

TABULAR LOG OF TEST RESULTS FOR A GIVEN BORING - - - - - 8

RETURN TO PREVIOUS MENU  - - - - - - - - - - - - - - - - 9


@ M              Enter Selection     :7
ENTER P TO LIST FOR A PROJECT NAME, OR S TO LIST FOR A SITE:S
ENTER SITE NAME:ROB
```

SUMMARY OF TEST RESULTS FOR SITE: ROB

ELEVATION	DEPTH	TEST NAME	TEST DATE	MATERIAL	RESULT 1 / REMARKS	RESULT 2	RESULT 3	RESULT 4
BORING NO.: CS-6			SID: 393	TOP ELEV.: 288.10		PROJECT: COM		
286.60	1.50	SI 304	11/05/1982	SC	W11.7			
285.10	3.00	SI 101	11/05/1982	[SC]	38	16	22	
285.10	3.00	SI 206	11/05/1982	[SC]	4/79.5	T/36.5		
285.10	3.00	SI 304	11/05/1982	[SC]	W14.4			
283.10	5.00	SI 304	11/05/1982	SC	W14.9			
BORING NO.: CS-7			SID: 394	TOP ELEV.: 288.10		PROJECT: COM		
287.50	1.50	SI 304	11/05/1982	SC	W7.3			
286.00	3.00	SI 101	11/05/1982	[SC]	25	12	13	
286.00	3.00	SI 206	11/05/1982	[SC]	4/81.5	T/34		
286.00	3.00	SI 304	11/05/1982	[SC]	W9.7			
284.00	5.00	SI 304	11/05/1982	SC	W7.9			
BORING NO.: A-1			SID: 395	TOP ELEV.: 288.10		PROJECT: COM		
289.50	0.50	SI 304	11/05/1982	SM	W2.6			
288.50	1.50	SI 101	11/05/1982	[SC]	26	13	13	
288.50	1.50	SI 206	11/05/1982	[SC]	4/87	T/43		
288.50	1.50	SI 304	11/05/1982	[SC]	W13.4			
287.00	3.00	SI 304	11/05/1982	SC	W12.6			
BORING NO.: A-2			SID: 396	TOP ELEV.: 288.10		PROJECT: COM		
287.80	1.00	SI 304	11/05/1982	SC	W11.3			
285.80	3.00	SI 304	11/05/1982	SC	W12.8			
BORING NO.: A-3			SID: 397	TOP ELEV.: 288.10		PROJECT: COM		
288.20	0.50	SI 304	11/05/1982	SM	W9.2			
287.70	1.00	SI 101	11/05/1982	[SC]	28	14	14	
287.70	1.00	SI 206	11/05/1982	[SC]	4/81	T/33		
287.70	1.00	SI 304	11/05/1982	[SC]	W4.5			
285.70	3.00	SI 304	11/05/1982	SC	W9.7			

SUMMARY OF TEST RESULTS FOR SITE: ROB (CONT.)

ELEVATION	DEPTH	TEST NAME	TEST DATE	MATERIAL	RESULT 1 / REMARKS	RESULT 2	RESULT 3	RESULT 4
BORING NO.: A-4			SID: 398	TOP ELEV.: 288.10		PROJECT: COM		
287.30	0.50	SI 304	11/05/1982	SM	W7.2			
286.30	1.50	SI 101	11/05/1982	[SC]	25	12	13	
286.30	1.50	SI 206	11/05/1982	[SC]	4/85	T/35		
286.30	1.50	SI 304	11/05/1982	[SC]	W11.2			
284.80	3.00	SI 304	11/05/1982	SC	W12.0			
BORING NO.: A-5			SID: 399	TOP ELEV.: 288.10		PROJECT: COM		
289.60	0.50	SI 101	11/05/1982	[SC]	24	14	10	
289.60	0.50	SI 206	11/05/1982	[SC]	4/51	T/21		
289.60	0.50	SI 304	11/05/1982	[SC]	W6.5			
287.10	3.00	SI 304	11/05/1982	SC	W13.5			
BORING NO.: A-6			SID: 400	TOP ELEV.: 288.10		PROJECT: COM		
285.60	0.50	SI 304	11/05/1982	SC	W10.9			
283.10	3.00	SI 304	11/05/1982	SC	W16.1			
BORING NO.: A-7			SID: 401	TOP ELEV.: 288.10		PROJECT: COM		
288.00	0.50	SI 304	11/05/1982	SM	W5.2			
BORING NO.: A-8			SID: 402	TOP ELEV.: 288.10		PROJECT: COM		
287.10	0.50	SI 101	11/05/1982	[SC]	27	14	13	
287.10	0.50	SI 206	11/05/1982	[SC]	4/85.5	T/40.5		
287.10	0.50	SI 304	11/05/1982	[SC]	W8.7			
285.60	2.00	SI 304	11/05/1982	SC	W10.9			
BORING NO.: A-9			SID: 403	TOP ELEV.: 288.10		PROJECT: COM		
286.90	0.50	SI 304	11/05/1982	SM	W5.6			
286.40	1.00	SI 101	11/05/1982	[CL]	35	15	20	
286.40	1.00	SI 206	11/05/1982	[CL]	4/92	T/51		
286.40	1.00	SI 304	11/05/1982	[CL]	W11.0			

SUMMARY OF TEST RESULTS FOR SITE: ROB (CONT.)

ELEVATION	DEPTH	TEST NAME	TEST DATE	MATERIAL	RESULT 1 / REMARKS	RESULT 2	RESULT 3	RESULT 4
BORING NO.: A-10			SID: 404	TOP ELEV.: 288.10		PROJECT: COM		
289.30	0.50	SI 304	11/05/1982	SM	W5.4			
288.30	1.50	SI 101	11/05/1982	[CL]	31	15	16	
288.30	1.50	SI 206	11/05/1982	[CL]	4/95	T/51.5		
288.30	1.50	SI 304	11/05/1982	[CL]	W8.7			
BORING NO.: A-11			SID: 405	TOP ELEV.: 288.10		PROJECT: COM		
287.40	0.50	SI 304	11/05/1982	SC	W7.8			
284.90	3.00	SI 304	11/05/1982	SC	W13.0			
BORING NO.: CS-1			SID: 434	TOP ELEV.: 288.10		PROJECT: COM		
288.00	1.50	SI 304	11/05/1982	SC	W10.7			
286.50	3.00	SI 101	11/05/1982	[CL]	35	17	18	
286.50	3.00	SI 206	11/05/1982	[CL]	4/92.5	T/61.0		
286.50	3.00	SI 304	11/05/1982	[CL]	W18.4			
284.50	5.00	SI 304	11/05/1982	SC	W14.9			
BORING NO.: CS-2			SID: 435	TOP ELEV.: 288.10		PROJECT: COM		
287.10	1.50	SI 304	11/05/1982	SC	W9.4			
284.60	4.00	SI 304	11/05/1982	SC	W13.9			
BORING NO.: CS-3			SID: 436	TOP ELEV.: 288.10		PROJECT: COM		
287.20	1.50	SI 304	11/05/1982	SC	W17.7			
285.70	3.00	SI 101	11/05/1982	[SC]	37	17	20	
285.70	3.00	SI 206	11/05/1982	[SC]	4/85	T/46.5		
285.70	3.00	SI 304	11/05/1982	[SC]	W14.4			
284.20	4.50	SI 304	11/05/1982	SC	W13.0			
BORING NO.: CS-4			SID: 437	TOP ELEV.: 288.10		PROJECT: COM		
288.90	1.50	SI 304	11/05/1982	SC	W7.2			
287.40	3.00	SI 101	11/05/1982	[SC]	35	16	19	
287.40	3.00	SI 206	11/05/1982	[SC]	4/87.5	T/49		
287.40	3.00	SI 304	11/05/1982	[SC]	W17.3			
285.40	5.00	SI 304	11/05/1982	SC	W18.9			

SUMMARY OF TEST RESULTS FOR SITE: ROB (CONT.)

ELEVATION	DEPTH	TEST NAME	TEST DATE	MATERIAL	RESULT 1 REMARKS	RESULT 2	RESULT 3	RESULT 4
BORING NO.: CS-5			SID: 438	TOP ELEV.: 288.90		PROJECT: COM		
287.40	1.50	SI 304	11/05/1982	SC	W9.2			
285.90	3.00	SI 101	11/05/1982	[SC]	31	15	16	
285.90	3.00	SI 206	11/05/1982	[SC]	4/84.5	T/41.5		
285.90	3.00	SI 304	11/05/1982	[SC]	W14.8			
283.90	5.00	SI 304	11/05/1982	SC	W18.7			

```
        MENU FOR SELECTION OF SUMMARY REPORTS                Selection
      ==========================================================  ---------
      LIST OF PROJECTS AND SITES - - - - - - - - - - - - - - - - - 1

      LIST OF BORINGS, COORD., DATE, TOP ELEV., AND DEPTH
            FOR A PROJECT OR A SITE  - - - - - - - - - - - - - - - 2

      TABULAR LOG FOR GIVEN BORING (CLASS & DESCRIP) - - - - - - - 3

      TABULAR LOG OF DRILLING TYPE FOR A GIVEN BORING  - - - - - - 4

      TABULAR LOG OF BLOW COUNTS FOR A GIVEN BORING  - - - - - - - 5

      LIST OF TEST TYPES FOR GIVEN PROJECT OR SITE - - - - - - - - 6

      TEST RESULTS FOR GIVEN PROJECT OR SITE BY BORING NO. - - - 7

      TABULAR LOG OF TEST RESULTS FOR A GIVEN BORING - - - - - - 8

      RETURN TO PREVIOUS MENU  - - - - - - - - - - - - - - - - - - 9

                  Enter Selection      :8

Enter Boring Number      :a-1



  No. of duplicate boring numbers =          3
     NOTE BORING ID WHEN YOU SEE THE ONE YOU WANT.
  Boring No::A-1       :
  Project :ADS                                    :
  Site :HUN                                     :
  Project Description :LI184,FY80               :
  Boring ID:  163:

  Boring No::A-1       :
  Project :COM                                    :
  Site :ROB                                     :
  Project Description :LI10625,FY84             :
  Boring ID:  395:

  Boring No::A-1       :
  Project :TES                                    :
  Site :BEN                                     :
  Project Description :LI396,FY85               :
  Boring ID:  413:
Enter the boring ID for the boring you want. :163
```

PROJ:. ADS SITE: HUN

TEST RESULTS FOR BORING: A-1 SID: 163 TOP ELEV: 39.80

ELEVATION	DEPTH	TEST NAME	TEST DATE	MATERIAL	RESULT 1	RESULT 2	RESULT 3	RESULT 4	REMARKS
39.80	0.00	SI101	05/31/1979	[SPSM]	NP	NP	NP		
39.80	0.00	SI206	05/31/1979	[SPSM]	1/100	2/100	4/97	6/79	
39.80	0.00	SI206	05/31/1979	[SPSM]	C/25	T/8			
39.80	0.00	SI304	05/31/1979	[SPSM]	W7.2				
35.80	4.00	SI304	05/31/1979	SM	W7.2				

APPENDIX D

RETRIEVAL OF DATA FROM SYSTEM 2000 DATA BASE

1. The LIST commands needed to retrieve data from the BORDB data base on System 2000 are shown in Table D1. The retrieved data obtained with each list command shown in Table D1 must be stored in a file with the same name as shown in Table D1 (using MODEM7 or other communications software that is available on the microcomputer). The list commands are broken up in Table D1 to stay within the 132-character limit imposed by System 2000. A count should be made of the number of records that exist (e.g., LIST COUNT(C1) WH C6 EQ ___ OR C6 EQ ___ OR C6 EQ ___) to check the buffer storage required. For example, MODEM7 has a maximum buffer storage of 37,376 characters. If there are 300 records with 132 characters each, the buffer capacity will be exceeded (132 x 300 = 39,600) and the LIST command would have to limit the number of records to 280. Thus, the data specified by the WHERE portion of the LIST command should be limited so that the count value times the number of characters per line does not exceed 280. This limitation may require more than one of the same type .TXT files with slightly different names (e.g., BORFEATC.TXT, BORFEATD.TXT, and BORFEATE.TXT) that can then be combined into one file (BORFEATC.TXT) using a text editor. The buffer limitations are not a problem with software developed for transfering files between microcomputers and mainframes by the Waterways Experiment Station (WES) Automation Technology Center (ATC) (James Jefferson, FTS 542-3985).

2. All the necessary dBASE II data files have been created and are available on a disk with the transfer procedures in one command file called BORTRANS that can be used once the .TXT files of retrieved data have been created, edited to delete unwanted lines, and checked for accuracy. Tables D2-D11 list the structure of the intermediate and final dBASE II files and the command file BORTRANS.PRG and its subprograms.

3. Before the BORTRANS.PRG is used, the retrieved data in the .TXT files should be listed and checked to ensure that there are no unusual gaps in the tabular listing. System 2000 spaces columns of data three characters apart,

based on the length of the data field or field name (used for the column header), whichever is longer. An extra five spaces is used before an integer. An extra 11 spaces occurred in the data from the third LIST command in Table D1 when data were retrieved for the BOR3C.TXT file. It is possible that the same LIST command may not always produce the same spacing of data. The intermediate data files shown in Tables D2-D4 have the necessary spaces (BLNK, BLNK1, BLNK2) to account for the spaces in the System 2000 listings. The structure of these files should be checked against the final .TXT files (modified and combined as necessary) to ensure that the spacing of data matches in both types of files.

4. Once the BORTRANS program is executed and is successfully completed, the intermediate data base files are automatically cleared, but the .TXT files are not cleared. Thus, the .TXT files are available, if needed for a second try in generating the final data base files. The final data base files are filled in and index files are created. Retrieved elevation values are stored and automatically converted to depth values (using the top of hole elevation). The depth values are stored in the new data base files. If the final data base files are incorrect (fields broken up), the program CLRDBF (Table D11) can be used to clear all final data base files. The structure of the intermediate data base files should be checked against the .TXT files and corrections made before trying BORTRANS a second time.

5. Once the final data base files are correct, the .TXT files can be overwritten and used to store more data retrieved from the System 2000 data base. Since BORTRANS appends data from the intermediate data base files and then clears them, the intermediate files are ready for use in transferring more data from the .TXT files.

Table D1

Commands to Retrieve Data From System 2000 Boring Data Base (BORDB)

Commands to List Data from System 2000	Corresponding File Name	Number of Characters per Line
LIST C1,C29,C2,C3,C4, WH C6 EQ ___ (or C5 EQ___); (or WH C6 EQ ___ OR C6 EQ ___; for more than one project or site name)	BOR1C.TXT	93
LIST C1,C29,C5,C6,C10,C28 WH SAME;	BOR2C.TXT	131
LIST C1,C29,C7,C8,C9,C11,C12,C13 WH SAME;	BOR3C.TXT	129
LIST C1,C29,C14,C15,C16,C17,C18,C19,C20 WH SAME;	BOR4C.TXT	129
LIST C1,C29,C21,C22,C23,C24,C25,C26,C27 WH SAME;	BOR5C.TXT	133
LIST C1,C29,C41,C43,C45,C46 WH SAME AND C43 EXISTS;	BORFEATC.TXT	95
LIST C1,C29,C51,C53,C55 WH SAME AND C55 EXISTS;	BORSEGC.TXT	60
LIST C1,C29,C61,C63,C65 WH SAME AND C61 EXISTS;	BORTSTC.TXT	60
LIST C1,C29,C71,C73,C75,C77,C79,C81,C83 WH SAME AND C77 EXISTS;	BORTSTR1.TXT	132
LIST C1,C29,C85,C87 WH SAME AND C77 EXISTS;	BORTSTR2.TXT	65
LIST C1,C29,C91,C93,C95 WH SAME AND C93 EXISTS;	BORSPTC.TXT	70

Table D2

Structure of Initial Data Base Files for BORMAIN.DBF

STRUCTURE FOR FILE: C:BOR1C .DBF
NUMBER OF RECORDS: 00000
DATE OF LAST UPDATE: 02/26/85
PRIMARY USE DATABASE

FLD	NAME	TYPE	WIDTH	DEC
001	AST	C	003	
002	BORID	C	015	
003	SID	N	005	
004	BLNK1	C	003	
005	CLASS	C	013	
006	REMARKS	C	043	
007	AUTHOR	C	010	
** TOTAL **			00093	

STRUCTURE FOR FILE: C:BOR2C .DBF
NUMBER OF RECORDS: 00000
DATE OF LAST UPDATE: 02/26/85
PRIMARY USE DATABASE

FLD	NAME	TYPE	WIDTH	DEC
001	AST	C	003	
002	BORID	C	015	
003	SID	N	005	
004	BLNK1	C	003	
005	PROJ:NAME	C	043	
006	SITE:NAME	C	043	
007	ACCUR	N	005	
008	BLNK2	C	003	
009	DAYS:DRIL	N	010	002
** TOTAL **			00131	

STRUCTURE FOR FILE: C:BOR3C .DBF
NUMBER OF RECORDS: 00000
DATE OF LAST UPDATE: 02/26/85
PRIMARY USE DATABASE

FLD	NAME	TYPE	WIDTH	DEC
001	AST	C	003	
002	BORID	C	015	
003	SID	N	005	
004	BLNK1	C	003	
005	PROJ:DESC	C	028	
006	LAT	N	011	002
007	LONG	N	015	002
008	REF	C	010	
009	BLNK2	C	011	
010	LOC:NS	N	012	002
011	LOC:EW	N	015	002
** TOTAL **			00129	

STRUCTURE FOR FILE: C:BOR4C .DBF
NUMBER OF RECORDS: 00000
DATE OF LAST UPDATE: 02/26/85
PRIMARY USE DATABASE

FLD	NAME	TYPE	WIDTH	DEC
001	AST	C	003	
002	BORID	C	015	
003	SID	N	005	
004	LOC:ACCUR	N	012	
005	BLNK1	C	003	
006	LOC:REF	C	013	
007	DATE	C	010	
008	BLNK2	C	003	
009	DRILLER	C	023	
010	INSP	C	018	
011	LOC:BLOG	C	013	
012	LOC:DLOG	C	010	
** TOTAL **			00129	

STRUCTURE FOR FILE: C:BOR5C .DBF
NUMBER OF RECORDS: 00000
DATE OF LAST UPDATE: 02/26/85
PRIMARY USE DATABASE

FLD	NAME	TYPE	WIDTH	DEC
001	AST	C	003	
002	BORID	C	015	
003	SID	N	005	
004	BLNK1	C	003	
005	LOC:SAM	C	023	
006	DATA:STAT	C	013	
007	HOLE:STAT	C	013	
008	PURPOSE	C	023	
009	TOP:HOLE	N	012	002
010	EL:ACCUR	N	010	
011	DEPTH	N	012	002
** TOTAL **			00133	

Table D3

Structure of Intermediate Data Base Files for BORMAIN.DBF

STRUCTURE FOR FILE: C:BOR1 .DBF
NUMBER OF RECORDS: 00000
DATE OF LAST UPDATE: 02/26/85
PRIMARY USE DATABASE

FLD	NAME	TYPE	WIDTH	DEC
001	BORID	C	010	
002	SID	N	005	
003	CLASS	C	010	
004	REMARKS	C	040	
005	AUTHOR	C	010	
** TOTAL **			00076	

STRUCTURE FOR FILE: C:BOR2 .DBF
NUMBER OF RECORDS: 00000
DATE OF LAST UPDATE: 02/26/85
PRIMARY USE DATABASE

FLD	NAME	TYPE	WIDTH	DEC
001	BORID	C	010	
002	SID	N	005	
003	PROJ:NAME	C	040	
004	SITE:NAME	C	040	
005	ACCUR	N	001	
006	DAYS:DRIL	N	004	002
** TOTAL **			00101	

STRUCTURE FOR FILE: C:BOR3 .DBF
NUMBER OF RECORDS: 00000
DATE OF LAST UPDATE: 02/26/85
PRIMARY USE DATABASE

FLD	NAME	TYPE	WIDTH	DEC
001	BORID	C	010	
002	SID	N	005	
003	PROJ:DESC	C	025	
004	LAT	N	009	002
005	LONG	N	010	002
006	REF	C	015	
007	LOC:NS	N	010	002
008	LOC:EW	N	010	002
** TOTAL **			00095	

STRUCTURE FOR FILE: C:BOR4 .DBF
NUMBER OF RECORDS: 00000
DATE OF LAST UPDATE: 02/26/85
PRIMARY USE DATABASE

FLD	NAME	TYPE	WIDTH	DEC
001	BORID	C	010	
002	SID	N	005	
003	LOC:ACCUR	N	001	
004	LOC:REF	C	010	
005	DATE	C	010	
006	DRILLER	C	020	
007	INSP	C	015	
008	LOC:BLOG	C	010	
009	LOC:DLOG	C	010	
** TOTAL **			00092	

STRUCTURE FOR FILE: C:BOR5 .DBF
NUMBER OF RECORDS: 00000
DATE OF LAST UPDATE: 02/26/85
PRIMARY USE DATABASE

FLD	NAME	TYPE	WIDTH	DEC
001	BORID	C	010	
002	SID	N	005	
003	LOC:SAM	C	020	
004	DATA:STAT	C	010	
005	HOLE:STAT	C	010	
006	PURPOSE	C	020	
007	TOP:HOLE	N	008	002
008	EL:ACCUR	N	001	
009	DEPTH	N	007	002
** TOTAL **			00092	

Table D4

Structure of Intermediate Data Base Files for Other BORDBM Files

STRUCTURE FOR FILE: C:BORFEATC.DBF
NUMBER OF RECORDS: 00000
DATE OF LAST UPDATE: 02/26/85
PRIMARY USE DATABASE

FLD	NAME	TYPE	WIDTH	DEC
001	AST	C	003	
002	BORID	C	015	
003	SID	N	005	
004	BLNK1	C	003	
005	FEAT:NAME	C	013	
006	FEAT:ELEV	N	009	002
007	BLNK2	C	003	
008	FEAT:DATE	C	013	
009	FEAT:DESC	C	030	
** TOTAL **			00095	

STRUCTURE FOR FILE: C:BORSEGC .DBF
NUMBER OF RECORDS: 00000
DATE OF LAST UPDATE: 02/26/85
PRIMARY USE DATABASE

FLD	NAME	TYPE	WIDTH	DEC
001	AST	C	003	
002	BORID	C	015	
003	SID	N	005	
004	BLNK	C	003	
005	BOR:TOOL	C	013	
006	BOR:SIZE	C	011	
007	BOR:ELEV	N	009	002
** TOTAL **			00060	

STRUCTURE FOR FILE: C:BORTSTC .DBF
NUMBER OF RECORDS: 00000
DATE OF LAST UPDATE: 02/26/85
PRIMARY USE DATABASE

FLD	NAME	TYPE	WIDTH	DEC
001	AST	C	003	
002	BORID	C	015	
003	SID	N	005	
004	BLNK	C	003	
005	TYP:NAME	C	013	
006	TYP:NUM	C	010	
007	TYP:LOC	C	010	
** TOTAL **			00060	

STRUCTURE FOR FILE: C:BORSPTC .DBF
NUMBER OF RECORDS: 00355
DATE OF LAST UPDATE: 03/05/85
PRIMARY USE DATABASE

FLD	NAME	TYPE	WIDTH	DEC
001	AST	C	003	
002	BORID	C	015	
003	SID	N	005	
004	BLOW:ELEV	N	012	002
005	BLOW:CTS	C	010	
006	BLNK	C	003	
007	BLOW:RMKS	C	020	
** TOTAL **			00069	

STRUCTURE FOR FILE: C:BORTSTR1.DBF
NUMBER OF RECORDS: 00000
DATE OF LAST UPDATE: 02/26/85
PRIMARY USE DATABASE

FLD	NAME	TYPE	WIDTH	DEC
001	AST	C	003	
002	BORID	C	015	
003	SID	N	005	
004	BLNK	N	003	
005	TEST:NAME	C	013	
006	TEST:DATE	C	013	
007	TEST:MAT	C	013	
008	TEST:ELEV	N	009	002
009	BLNK2	C	003	
010	TEST:RES1	C	018	
011	TEST:RES2	C	018	
012	TEST:RES3	C	018	
013	TEST:RES4	C	015	
014	REMARKS	C	020	
** TOTAL **			00167	

STRUCTURE FOR FILE: C:BORTSTR2.DBF
NUMBER OF RECORDS: 00000
DATE OF LAST UPDATE: 02/26/85
PRIMARY USE DATABASE

FLD	NAME	TYPE	WIDTH	DEC
001	AST	C	003	
002	BORID	C	015	
003	SID	N	005	
004	BLNK	N	003	
005	TEST:RES4	C	018	
006	REMARKS	C	020	
** TOTAL **			00065	

Table D5

Structure of Final BORDBM Data Base Files

STRUCTURE FOR FILE: C:BORMAIN .DBF
NUMBER OF RECORDS: 00044
DATE OF LAST UPDATE: 04/02/85
PRIMARY USE DATABASE

FLD	NAME	TYPE	WIDTH	DEC
001	BORID	C	010	
002	SID	N	005	
003	CLASS	C	010	
004	REMARKS	C	040	
005	AUTHOR	C	010	
006	PROJ:NAME	C	040	
007	SITE:NAME	C	040	
008	PROJ:DESC	C	025	
009	LAT	N	009	002
010	LONG	N	010	002
011	ACCUR	N	001	
012	REF	C	015	
013	LOC:NS	N	010	002
014	LOC:EW	N	010	002
015	LOC:ACCUR	N	001	
016	LOC:REF	C	010	
017	DATE	C	010	
018	DRILLER	C	020	
019	INSP	C	015	
020	LOC:BLOG	C	010	
021	LOC:DLOG	C	010	
022	LOC:SAM	C	020	
023	DATA:STAT	C	010	
024	HOLE:STAT	C	010	
025	PURPOSE	C	020	
026	TOP:HOLE	N	008	002
027	EL:ACCUR	N	001	
028	DEPTH	N	007	002
029	DAYS:DRIL	N	004	002
** TOTAL **			00392	

STRUCTURE FOR FILE: C:BORFEA .DBF
NUMBER OF RECORDS: 00490
DATE OF LAST UPDATE: 03/20/85
PRIMARY USE DATABASE

FLD	NAME	TYPE	WIDTH	DEC
001	BORID	C	010	
002	SID	N	005	
003	FEAT:NAME	C	010	
004	FEA:DEPTH	N	007	002
005	FEAT:ELEV	N	008	002
006	FEAT:DATE	C	010	
007	FEAT:DESC	C	030	
** TOTAL **			00081	

STRUCTURE FOR FILE: C:BORSEG .DBF
NUMBER OF RECORDS: 00045
DATE OF LAST UPDATE: 03/28/85
PRIMARY USE DATABASE

FLD	NAME	TYPE	WIDTH	DEC
001	BORID	C	010	
002	SID	N	005	
003	BOR:TOOL	C	010	
004	BOR:SIZE	C	005	
005	BOR:DEPTH	N	007	002
006	BOR:ELEV	N	008	002
** TOTAL **			00046	

STRUCTURE FOR FILE: C:BORSPT .DBF
NUMBER OF RECORDS: 00355
DATE OF LAST UPDATE: 03/28/85
PRIMARY USE DATABASE

FLD	NAME	TYPE	WIDTH	DEC
001	BORID	C	010	
002	SID	N	005	
003	BLO:DEPTH	N	007	002
004	BLOW:ELEV	N	008	002
005	BLOW:CTS	C	010	
006	BLOW:RMKS	C	020	
** TOTAL **			00061	

(Continued)

Table D5 (Concluded)

STRUCTURE FOR FILE: C:BORTST .DBF
NUMBER OF RECORDS: 00104
DATE OF LAST UPDATE: 03/21/85
PRIMARY USE DATABASE

FLD	NAME	TYPE	WIDTH	DEC
001	BORID	C	010	
002	SID	N	005	
003	TYP:NAME	C	010	
004	TYP:NUM	C	003	
005	TYP:LOC	C	010	
** TOTAL **			00039	

STRUCTURE FOR FILE: C:BORRSL .DBF
NUMBER OF RECORDS: 00205
DATE OF LAST UPDATE: 03/29/85
PRIMARY USE DATABASE

FLD	NAME	TYPE	WIDTH	DEC
001	BORID	C	010	
002	SID	N	005	
003	TEST:NAME	C	010	
004	TEST:DATE	C	010	
005	TEST:MAT	C	010	
006	TST:DEPTH	N	007	002
007	TEST:ELEV	N	008	002
008	TEST:RES1	C	015	
009	TEST:RES2	C	015	
010	TEST:RES3	C	015	
011	TEST:RES4	C	015	
012	REMARKS	C	020	
** TOTAL **			00141	

STRUCTURE FOR FILE: C:BORSID .DBF
NUMBER OF RECORDS: 00044
DATE OF LAST UPDATE: 04/12/85
PRIMARY USE DATABASE

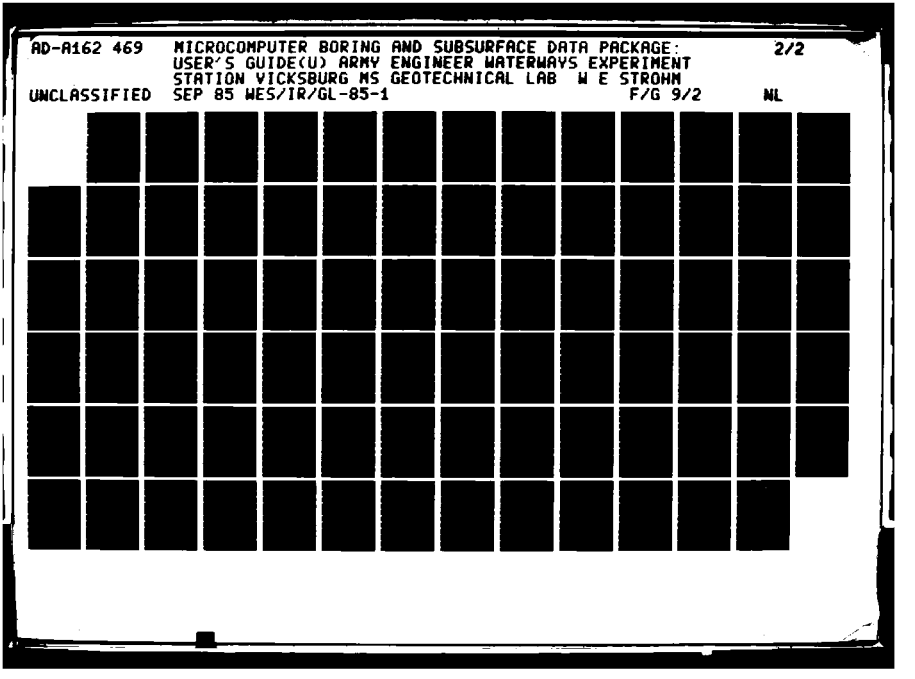
FLD	NAME	TYPE	WIDTH	DEC
001	BORID	C	010	
002	SID	N	005	
003	PROJ:NAME	C	040	
004	SITE:NAME	C	040	
005	PROJ:DESC	C	025	
006	LOC:NS	N	010	002
007	LOC:EW	N	010	002
008	DATE	C	010	
009	TOP:HOLE	N	008	002
010	DEPTH	N	007	002
011	PLTNO	N	003	
** TOTAL **			00169	

Table D6

Listing of Command File to Transfer Retrieved Data into BORDBM Files

```
* COMMAND FILE TO TRANSFER RETRIEVED DATA FILES FROM BORDB ON SYSTEM 200
* TO DBASE II DATA FILES.  THIS FILE IS CALLED "BORTRANS.PRG"
SET TALK OFF
* APPEND FROM .TXT FILES
USE BOR1C
APPEND FROM BOR1C.TXT SDF
USE BOR2C
APPEND FROM BOR2C.TXT SDF
USE BOR3C
APPEND FROM BOR3C.TXT SDF
USE BOR4C
APPEND FROM BOR4C.TXT SDF
USE BOR5C
APPEND FROM BOR5C.TXT SDF
* use intermediate files to append from above and change field lengths.
*  Cannot use update command when field lengths change; decimals chopped!.
use bor1
append from bor1c
use bor2
append from bor2c
use bor3
append from bor3c
use bor4
append from bor4c
use bor5
append from bor5c
* COMBINE INTO MAIN BORING INFORMATION FILE
USE BORMAIN
APPEND FROM BOR2
UPDATE FROM BOR1 ON SID REPLACE CLASS,REMARKS,AUTHOR
UPDATE FROM BOR3 ON SID REPLACE PROJ:DESC,LAT,LONG,REF,LOC:NS,LOC:EW
UPDATE FROM BOR4 ON SID REPLACE LOC:ACCUR,LOC:REF,;
DATE,DRILLER,INSP,LOC:BLOG,LOC:DLOG
UPDATE FROM BOR5 ON SID REPLACE LOC:SAM,DATA:STAT,;
HOLE:STAT,PURPOSE,TOP:HOLE,EL:ACCUR,DEPTH
* FINISH APPENDING FROM .TXT FILES TO OTHER DATA FILES
USE BORFEATC
APPEND FROM BORFEATC.TXT SDF
USE BORSEGC
APPEND FROM BORSEGC.TXT SDF
USE BORTSTC
APPEND FROM BORTSTC.TXT SDF
USE BORTSTR1
APPEND FROM BORTSTR1.TXT SDF
USE BORTSTR2
APPEND FROM BORTSTR2.TXT SDF
USE BORSPTC
APPEND FROM BORSPTC.TXT SDF
```

(Continued)


AD-A162 469 MICROCOMPUTER BORING AND SUBSURFACE DATA PACKAGE: 2/2
USER'S GUIDE(U) ARMY ENGINEER WATERWAYS EXPERIMENT
STATION VICKSBURG MS GEOTECHNICAL LAB W E STROHM
UNCLASSIFIED SEP 85 WES/IR/GL-85-1 F/G 9/2 NL

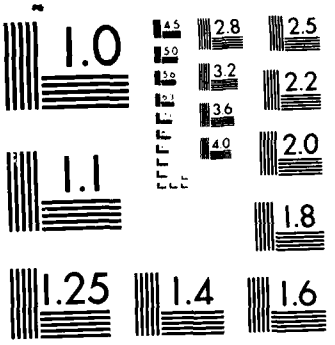


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Table D6 (Concluded)

```
* APPEND TO FINAL BORDB FILES
USE BORFEA
APPEND FROM BORFEATC
USE BORSEG
APPEND FROM BORSEGC
USE BORTST
APPEND FROM BORTSTC
USE BORSPT
APPEND FROM BORSPTC
* COMBINE BORTSTR1 AND BORTSTR2 INTO FINAL BORRSL.DBF
DO BORUP
* CLEAR INTERMEDIATE FILES
DO BORCLR
* GENERATE INDEX FILES
DO BORINIT
* CONVERT ALL ELEVATIONS TO DEPTHS
DO BORELDEP
SET TALK ON
RETURN
```

Table D7

Listing of Command File BORUP.PRG

```
* COMMAND FILE TO COMBINE BORTSTR1 AND BORTSTR2     BORUP.PRG
SET TALK OFF
USE BORTSTR1
STORE 1 TO  RECNO
DO WHILE .NOT. EOF
  REPLACE BLNK WITH RECNO
  SKIP
  STORE RECNO + 1 TO RECNO
ENDDO
USE BORTSTR2
STORE 1 TO RECNO
DO WHILE .NOT. EOF
  REPLACE BLNK WITH RECNO
  SKIP
  STORE RECNO + 1 TO RECNO
ENDDO
CLEAR
USE BORTSTR1
UPDATE FROM BORTSTR2 ON BLNK REPLACE TEST:RES4,REMARKS
USE
USE BORRSL
APPEND FROM BORTSTR1
SET TALK ON
RETURN
```

Table D8

Listing of Command File to Initiate BORSID.DBF and Create All Index Files

```
* COMMAND FILE TO INITIATE BORSID.DBF AND ALL INDEX FILES FOR USE IN BORDBM
*   PROGRAM AFTER DATA IN .TXT FILES HAVE BEEN COPIED INTO DBF FILES.
*                                                                BORINIT.PRG
SET TALK OFF
USE BORSID
APPEND FROM BORMAIN
INDEX ON BORID TO BORSIDI
INDEX ON STR(SID,5,0) TO BORSIDN
INDEX ON STR(LOC:NS,10,2) + STR(LOC:EW,10,2) TO BORSIDL
INDEX ON PROJ:NAME + SITE:NAME TO BORSIDP
USE BORMAIN
INDEX ON BORID + STR(SID,5,0) TO BORMAINI
USE BORFEA
INDEX ON BORID + STR(SID,5,0) + STR(15000-FEAT:ELEV,8,2) TO BORFEAI
USE BORSEG
INDEX ON BORID + STR(SID,5,0) + STR(15000-BOR:ELEV,8,2) TO BORSEGI
USE BORTST
INDEX ON BORID TO BORTSTI
INDEX ON STR(SID,5,0) TO BORTSTN
USE BORRSL
INDEX ON STR(SID,5,0) + BORID + STR(15000-TEST:ELEV,8,2) TO BORRSLI
USE BORSPT
INDEX ON BORID + STR(SID,5,0) + STR(15000-BLOW:ELEV,8,2) TO BORSPTI
SET TALK ON
RETURN
```

Table D9

Listing of Command File to Convert Elevations to Depths and Store Values

```
* COMMAND FILE TO CONVERT ELEVATIONS TO DEPTHS FOR DATA RETRIEVED FROM BORDB
*   ON CDC AND SET UP IN DATA FILES FOR BORDBM UNDER DBASE II.  BORELDEP.PRG
SET TALK ON
USE BORSID INDEX BORSIDI
STORE # TO RECNO
* CYCLE THRU BORSID AND EACH DFB WITH ELEV AND DEPTH.
DO WHILE .NOT. EOF
 STORE TOP:HOLE TO TOPELM
 STORE BORID TO BORNOM
 STORE SID TO BORSIDM
 STORE STR(BORSIDM,5,0) TO BORSIDC
*
  USE BORFEA INDEX BORFEAI
  FIND &BORNOM
   IF # <> 0
     DO WHILE BORID = BORNOM .AND. .NOT. EOF
       IF SID = BORSIDM
        REPLACE FEA:DEPTH WITH TOPELM - FEAT:ELEV
        SKIP
       ELSE
        SKIP
       ENDIF
     ENDDO
   ENDIF
*
  USE BORSEG INDEX BORSEGI
  FIND &BORNOM
   IF # <> 0
     DO WHILE BORID = BORNOM .AND. .NOT. EOF
       IF SID = BORSIDM
         REPLACE BOR:DEPTH WITH TOPELM - BOR:ELEV
         SKIP
       ELSE
         SKIP
       ENDIF
     ENDDO
   ENDIF
```

(Continued)

Table D9 (Concluded)

```
*
  USE BORSPT INDEX BORSPTI
  FIND &BORNOM
   IF # <> 0
    DO WHILE BORID = BORNOM .AND. .NOT. EOF
     IF SID = BORSIDM
      REPLACE BLO:DEPTH WITH TOPELM - BLOW:ELEV
      SKIP
     ELSE
      SKIP
     ENDIF
    ENDDO
   ENDIF
*
  USE BORRSL INDEX BORRSLI
  FIND '&BORSIDC'
   IF # <> 0
     DO WHILE SID = BORSIDM .AND. .NOT. EOF
           REPLACE TST:DEPTH WITH TOPELM - TEST:ELEV
           SKIP
     ENDDO
   ENDIF
*  INCREMENT BORSID TO NEXT BORID
  USE BORSID INDEX BORSIDI
  GO RECNO
  SKIP
   IF EOF
     LOOP
   ELSE
     STORE # TO RECNO
   ENDIF
ENDDO
SET TALK ON
RETURN
```

Table D10

Listing of Command File to Clear Intermediate Files

```
* CLEAR INTERMEDIATE FILES     BORCLR.PRG
SET TALK OFF
CLEAR
*
USE BOR1C
COPY STRU TO BORTMP
USE BORTMP
DELE FILE BOR1C
COPY STRU TO BOR1C
*
USE BOR2C
DELE FILE BORTMP
COPY STRU TO BORTMP
USE BORTMP
DELE FILE BOR2C
COPY STRU TO BOR2C
*
USE BOR3C
DELE FILE BORTMP
COPY STRU TO BORTMP
USE BORTMP
DELE FILE BOR3C
COPY STRU TO BOR3C
*
USE BOR4C
DELE FILE BORTMP
COPY STRU TO BORTMP
USE BORTMP
DELE FILE BOR4C
COPY STRU TO BOR4C
*
USE BOR5C
DELE FILE BORTMP
COPY STRU TO BORTMP
USE BORTMP
DELE FILE BOR5C
COPY STRU TO BOR5C
*
USE BOR1
DELE FILE BORTMP
COPY STRU TO BORTMP
USE BORTMP
DELE FILE BOR1
COPY STRU TO BOR1
*
USE BOR2
DELE FILE BORTMP
COPY STRU TO BORTMP
USE BORTMP
DELE FILE BOR2
COPY STRU TO BOR2
*
USE BOR3
DELE FILE BORTMP
COPY STRU TO BORTMP
USE BORTMP
DELE FILE BOR3
COPY STRU TO BOR3
*
USE BOR4
DELE FILE BORTMP
COPY STRU TO BORTMP
USE BORTMP
DELE FILE BOR4
COPY STRU TO BOR4
*
USE BOR5
DELE FILE BORTMP
COPY STRU TO BORTMP
USE BORTMP
DELE FILE BOR5
COPY STRU TO BOR5
*
USE BORFEATC
DELE FILE BORTMP
COPY STRU TO BORTMP
USE BORTMP
DELE FILE BORFEATC
COPY STRU TO BORFEATC
*
USE BORSEGC
DELE FILE BORTMP
COPY STRU TO BORTMP
USE BORTMP
DELE FILE BORSEGC
COPY STRU TO BORSEGC
```

(Continued)

Table D10 (Concluded)

```
*
USE BORTSTC
DELE FILE BORTMP
COPY STRU TO BORTMP
USE BORTMP
DELE FILE BORTSTC
COPY STRU TO BORTSTC
*
USE BORTSTR1
DELE FILE BORTMP
COPY STRU TO BORTMP
USE BORTMP
DELE FILE BORTSTR1
COPY STRU TO BORTSTR1
*
USE BORTSTR2
DELE FILE BORTMP
COPY STRU TO BORTMP
USE BORTMP
DELE FILE BORTSTR2
COPY STRU TO BORTSTR2
*
USE BORSPTC
DELE FILE BORTMP
COPY STRU TO BORTMP
USE BORTMP
DELE FILE BORSPTC
COPY STRU TO BORSPTC
*
USE
DELE FILE BORTMP
SET TALK ON
RETURN
```

Table D11

Command File to Clear Final BORDBM Files For Revisions

```
* command file to clear main BORDBM dbf files for revisions.  CLRDBF.PRG
set talk off
*
use bormain
copy stru to bortmp
use bortmp
dele file bormain
copy stru to bormain
*
use borsid
dele file bortmp
copy stru to bortmp
use bortmp
dele file borsid
copy stru to borsid
*
use borseg
dele file bortmp
copy stru to bortmp
use bortmp
dele file borseg
copy stru to borseg
*
use borspt
dele file bortmp
copy stru to bortmp
use bortmp
dele file borspt
copy stru to borspt
*
use borfea
dele file bortmp
copy stru to bortmp
use bortmp
dele file borfea
copy stru to borfea
*
use bortst
dele file bortmp
copy stru to bortmp
use bortmp
dele file bortst
copy stru to bortst
*
use borrsl
dele file bortmp
copy stru to bortmp
use bortmp
dele file borrsl
copy stru to borrsl
*
USE
DELE FILE BORTMP
set talk on
return
```

APPENDIX E

LISTING OF BORDBM PROGRAMS

```
* modified boring data base main menu 02-04-85, BORDBM.PRG
*  FOR USE WITH DATA RETRIEVED FROM SYSTEM 2000 ON CDC.
clear
set talk off
store 'M  to running
do while running <> '7'
SET PRINT ON
?? CHR(27)+"@"
SET PRINT OFF
erase
?
?
remark              MAIN MENU FOR BORING DATA BASE          SELECTION
REMARK         ---------------------------------------  ---------
REMARK         SUMMARY OF BORING DATA BASE PROCEDURES  - - -  1
?
REMARK         ENTER NEW DATA OR EDIT EXISTING DATA  - - - -  2
?
REMARK         LOCATE B RING WITHIN GIVEN COORD S - - - - -  3
?
REMARK         PLOT BORING LOCATIONS FOR PROJECT OR SITE - -  4
?
REMARK         PLOT LOG OF BORING S - - - - - - - - - - - -  5
?
REMARK         PRINT SUMMARY REPORTS OF DATA - - - - - - - -  6
?
REMARK         EXIT TO MAIN OPERATING SYSTEM - - - - - - - -  7
?
?
ACCEPT                          Enter Selection            to running
store !(running) to running
*
*  special exit = 0 to enter dBASE II command language
if running = '0'
   erase
   ?
   ?
   remark  Enter DO BORDBM to return to this data base menu.
   ?
   ?
   store '7' to running
   loop
endif
*
if running = '1'
   DO BORMEXPL
   loop
endif
*
if running = '2'
   DO BORMENUM
   loop
endif
*
if running = '3'
```

```
   DO BORLOC
   loop
endif
*
if running = '6'
   DO BORPRINT
   loop
endif
*
if running = '4'
   DO BORCORD
   loop
endif
*
IF RUNNING = '5'
   DO BORLOG3
   LOOP
ENDIF
*
if running <> '7'
  remark                  Invalid selection
  accept '  Enter 7 to quit to system, or "Return" to try again' to running
endif
*
if running = '7'
   REMARK      Exiting BORING DATA BASE to System.
   remark      Enter DBASE BORDBM and a "Return" to reenter data base,
   REMARK        unless all BORDBM files are on disk in drive A, then
   REMARK        enter DBASE, followed by SET DEFAULT TO A, then enter
   remark        DO BORDBM.
   QUIT
endif
*
ENDDO
return
```

```
* Summary of BORDBM capabilities and procedures.     BORMEXPL.PRG
erase
?
remark  This boring data base package, called BORDBM, uses menus to provide
remark  the following options:
remark       a.  Data entry and editing.
remark       b.  List of borings bounded by two sets of given coordinates.
remark       c.  Plot of boring locations on dot matrix printer.
remark       d.  Plot of boring logs on dot matrix printer.
remark       e.  Various summary reports.
?
remark  Data entry and editing are divided into six catagories:
remark       a.  Boring information              (stored in BORMAIN.DBF),
REMARK       b.  Drilling interval data                     (BORSEG.DBF),
REMARK       c.  Class. & descr. of soil and rock layers    (BORFEA.DBF),
REMARK       d.  Split spoon test data                      (BORSPT.DBF),
REMARK       e.  Summary of test types                      (BORTST.DEF),
REMARK       f.  Test results                               (BORRSL.DBF).
?
remark  One or more index files are used with the main files to reduce the
remark  time for locating data.  A special file (BORSID.DBF plus index files)
remark  is used to keep track of borings and list pertinent data for duplicate
remark  borings.
?
remark          Hit any key to continue.
wait
?
?
?
remark  Identical boring numbers can be used for different projects, sites,
remark  or project descriptions, since a unique number is automatically
remark  assigned to each new boring entered into the data base.  When a new
remark  boring is entered, its number is checked and if duplicate numbers
remark  exist the user can chose to see a list of the project name, site name
remark  and project description.  When other data is entered for a boring, the
remark  user is asked for the boring number and asked to select the boring
remark  system identification (SID), if duplicate boring numbers exist.
remark  Thus, boring information should be entered before other data for that
remark  boring.  Once the top of hole elevation is entered, depths can be
remark  entered for other data, since depths are automatically stored and used
remark  to calculate elevations using the entered depth and the top of hole
remark  elevation.
?
?
?
remark  This package is identical to the boring data base under System 2000
remark  on the Corps-wide time sharing system operated by Control Data Corp.
remark  (CDC).  A transfer program package is available for transfering
remark  data retrieved from System 2000 to this dBase II software package.
?
remark              Hit any key to continue
wait
return
```

```
* MENU FOR SELECTION OF FILES TO ENTER, REVIEW, OR EDIT DATA =  DO BORMENUM
store 'G' to continue
do while continue <> '7'
erase
?
?
remark                  MENU FOR ENTERING NEW DATA
remark            OR REVIEWING, OR EDITING EXISTING DATA          Selection
remark      ================================================    ---------
remark      BORING INFORMATION - - - - - - - - - - - - - - - - - - - - 1
?
remark      SOIL & ROCK LAYERS (Class. & Descrip.) - - - - - - - - - - 2
?
remark      DRILLING INTERVAL DATA (Depth and Drill Type)- - - - - - - 3
?
remark      SPLIT SPOON TEST DATA (Blow Counts)  - - - - - - - - - - - 4
?
remark      FIELD OR LAB TEST SUMMARY (Type, No., & Loc. Results)- - - 5
?
remark      TEST RESULTS - - - - - - - - - - - - - - - - - - - - - - - 6
?
remark      RETURN TO PREVIOUS MENU  - - - - - - - - - - - - - - - - - 7
?
?
ACCEPT '                  Enter Selection        to continue
*
if continue = '1'
  store 'BORMAIN INDEX BORMAINI' to BFILE
  DO BORINPM
  loop
endif
*
if continue = '2'
  store 'BORFEA INDEX BORFEAI' to BFILE
  STORE 'BORFEA' TO BLAST
  store 'BORFEASN' to BSCREEN
  store 'BORFEAPT' TO BORPRNT
  DO BORENTRM
  loop
endif
*
if continue = '3'
  store 'BORSEG INDEX BORSEGI' TO BFILE
  STORE 'BORSEG' TO BLAST
  store 'BORSEGSN' to BSCREEN
  store 'BORSEGPT' TO BORPRNT
  DO BORENTRM
  loop
endif
*
if continue = '4'
  store 'BORSPT INDEX BORSPTI' TO BFILE
  STORE 'BORSPT' TO BLAST
  store 'BORSPTSN' TO BSCREEN
  store 'BORSPTPT' TO BORPRNT
```

```
  DO BORENTRM
  loop
endif
*
if continue = '5'
  store 'BORTST INDEX BORTSTI' TO BFILE
  STORE 'BORTST' TO BLAST
  store 'BORTSTSN' TO BSCREEN
  store 'BORTSTPT' TO BORPRNT
  DO BORENTRM
  loop
endif
*
if continue = '6'
  store 'BORRSL INDEX BORRSLI' TO BFILE
  STORE 'BORRSL' TO BLAST
  store 'BORRSLSN' TO BSCREEN
  store 'BORRSLPT' TO BORPRNT
  DO BORENTRM
  loop
endif
*
if continue <> '7'
  remark                          Invalid selection
  accept ' Enter 7 to exit to main menu, or "Return" to try again' to continue
endif
*
if continue = '7'
  store 'M' to running
  loop
endif
*
enddo
return
```

```
* adding, reviewing, or editing boring information.     BORINPM.PRG
*    for use with bormain.dbf
save to memvar
erase
store 0 to recno
USE BORMAIN
 GO BOTTOM
 store # to lastno
 store '9' to action
 DO BORMPRNT
USE &BFILE
DO WHILE !(action) <> 'Q'
*
* for entering new data
if !(action) = '1'
  do BORCHECK
    if num = -1
      store 1 to borsidm
    else
      store borsidm + 1 to borsidm
    endif
  append blank
  replace BORID with bornum
  replace SID with borsidm
  DO BORMSCRN
   store # to recno
   copy to BORTMP NEXT 1
   USE BORSID
   SET INDEX TO BORSIDN,BORSIDI,BORSIDL,BORSIDP
   append from BORTMP
   use &BFILE
   go recno
 store '9' to action
endif
* for editing of boring just entered or last one entered
if !(action) = '2'
    if recno = 0
      go lastno
      store # to recno
    else
      go recno
    endif
  store borid to bornum
  store proj:name to projm
  store site:name to sitem
  store proj:desc to descm
  store top:hole to topelm
  store loc:ns to locnsm
  store loc:ew to locewm
  store date to datem
  store depth to depthm
  DO BORMSCRN
  STORE # TO RECNO
   if borid <> bornum .or. proj:name <> projm .or. site:name <> sitem;
      .or. proj:desc <> descm .or. LOC:NS <> LOCNSM .OR. LOC:EW <> LOCEWM;
```

```
      .or. date <> datem .or. top:hole <> topelm .or. depth <> depthm
     copy to bortmp next 1
     USE BORSID
     SET INDEX TO BORSIDN,BORSIDI,BORSIDL,BORSIDP
     UPDA FROM BORTMP ON SID REPL BORID,PROJ:NAME,SITE:NAME,PROJ:DESC,;
     LOC:NS,LOC:EW,DATE,TOP:HOLE,DEPTH RANDOM
     use &BFILE
     go recno
   endif
   store '9' to action
endif
* for review of another record
if !(action) = '3'
  do BORFIND
   if action = 'Q
    loop
   else
    find &bornum
     do while borid = bornum .and. .not. eof
      if sid = borsidm
       store # to recno
       STORE 'NONE' TO BORNUM
       LOOP
      else
       skip
      endif
     enddo
   endif
 ERASE
 GO RECNO
 do bormprnt
 STORE '9' TO ACTION
 loop
endif
* for moving ahead one record
if !(action) = '4'
  skip +1
  store # to recno
  ERASE
  do bormprnt
  STORE '9' TO ACTION
  loop
endif
* for moving back one record
if !(action) = '5'
   skip -1
   store # to recno
   ERASE
   do bormprnt
   STORE '9' TO ACTION
   loop
endif
* to print a record
if !(action) = '6'
 if recno = 0
```

```
  go lastno
  store # to recno
 else
  go recno
 endif
  DO BORMPRNT
  ERASE
  STORE '9' TO ACTION
  DO BORMPRNT
endif
* to exit to previous menu
if !(action) = '7'
store '0' to action
loop
endif
*
 if !(action) = '9'
@ 18,3 SAY '------------------------------------------------------------------
 endif
*
remark         TO ENTER NEW BORINGS, OR REVIEW, EDIT, OR PRINT EXISTING DATA:
remark          1 = enter data for new boring, 2 = edit boring shown above,
remark          3 = review or edit another boring, 4 = skip ahead one boring
remark          5 = skip back one boring, 6 = print a boring, 7 = exit
*
accept '                Enter action number' to action
*
enddo
release all
restore from memvar
return
```

```
* PRINTING FORMAT FOR BORING INFORMATION DATA ENTRY, BORMPRNT.PRG
 IF !(ACTION) = '6'
  STORE 3 TO LN
  SET FORMAT TO PRINT
 ELSE
  STORE 0 TO LN
  SET FORMAT TO SCREEN
 ENDIF
  IF ACTION = '9' .AND. RECNO = 0
    @ LN,6 SAY 'COPY OF BORING INFORMATION FOR LAST BORING ENTERED'
  ELSE
    @ LN,6 SAY 'COPY OF BORING INFORMATION FOR SELECTED BORING'
  ENDIF
 IF !(ACTION) = '6'
  STORE 5 TO LN
 ENDIF
 STORE LN+1 TO LN
@ LN,15 say 'Hole No.:'
@ LN,25 SAY borid
@ LN,42 say 'Hole ID:'
@ LN,51 SAY sid
@ LN,60 say 'Class:'
@ LN,67 SAY class
 STORE LN+1 TO LN
@ LN,3 say 'Remarks:'
@ LN,12 SAY remarks
@ LN,54 say 'Author:'
@ LN,62 SAY author
 STORE LN+2 TO LN
@ LN,3 say 'Project Name:'
@ LN,17 SAY proj:name
 STORE LN+1 TO LN
@ LN,3 say 'Site Name:
@ LN,14 SAY site:name
 STORE LN+1 TO LN
@ LN,3 say 'Project Description:'
@ LN,24 SAY proj:desc
 STORE LN+2 TO LN
@ LN,3 say 'Latitude:'
@ LN,13 SAY lat
@ LN,25 say 'Longitude:'
@ LN,36 SAY long
@ LN,50 say 'Accur:
@ LN,57 SAY accur
@ LN,64 say 'Ref:
@ LN,69 SAY ref
 STORE LN+1 TO LN
@ LN,3 say 'Loc NS:
@ LN,11 SAY loc:ns
@ LN,25 say 'Loc EW:'
@ LN,33 SAY loc:ew
@ LN,47 say 'Accur:
@ LN,54 SAY loc:accur
@ LN,65 say 'Ref:
@ LN,70 SAY loc:ref
```

```
 STORE LN+1 TO LN
@ LN,3 say 'Date:'
@ LN,9 SAY date
@ LN,21 say 'Driller:'
@ LN,30 SAY driller
@ LN,52 say 'Inspector:'
@ LN,63 SAY insp
 STORE LN+2 TO LN
@ LN,3 say 'Loc Bor Log:'
@ LN,16 SAY loc:blog
@ LN,30 say 'Loc Drill Log:'
@ LN,45 SAY loc:dlog
 STORE LN+1 TO LN
@ LN,3 say 'Loc Samples:'
@ LN,16 SAY loc:sam
@ LN,45 say 'Data Status:'
@ LN,58 SAY data:stat
 STORE LN+1 TO LN
@ LN,3 say 'Purpose:'
@ LN,12 SAY purpose
 STORE LN+2 TO LN
@ LN,3 say 'Top of Hole Elev:'
@ LN,21 SAY top:hole
@ LN,35 say 'Elev Accur:'
@ LN,47 SAY el:accur
@ LN,58 say 'Depth:'
@ LN,65 SAY depth
 STORE LN+1 TO LN
@ LN,3 say 'Days to Drill Hole:'
@ LN,23 SAY days:dril
*
 IF !(ACTION) = '6'
  @ LN+1,3 SAY ' '
  eject
  SET FORMAT TO SCREEN
 ENDIF
return
```

```
* SCREEN FORMAT FOR BORING INFORMATION DATA ENTRY, BORMSCRN.PRG
SET FORMAT TO SCREEN
set SCREEN on
ERASE
 IF !(ACTION) = '1'
  @ 0,26 SAY 'DATA ENTRY FOR NEW BORING'
 ELSE
  @ 0,26 SAY 'FOR EDITING OF BORING INFORMATION'
 ENDIF
@ 1,2 SAY 'Use arrow keys to move around form, or CTRL E = up, CTRL X = down'
@ 2,3 say 'CTRL S = left, CTRL D = right, RETURN to skip down, '
@ 3,3 say '  and CTRL C to skip out of the form and end.'
@ 5,15 say 'Hole No.' get borid
@ 5,40 say 'Hole ID:'
@ 5,49 SAY SID
@ 5,60 say 'Class' get class
@ 6,3 say 'Remarks' get remarks
@ 6,54 say 'Author' get author
@ 7,3 say 'Project Name' get proj:name
@ 8,3 say 'Site Name' get site:name
@ 9,3 say 'Project Description' get proj:desc
@ 10,3 say 'Latitude' get lat
@ 10,25 say 'Longitude' get long
@ 10,50 say 'Accur' get accur
@ 10,60 say 'Ref' get ref
@ 11,3 say 'Loc NS' get loc:ns
@ 11,25 say 'Loc EW' get loc:ew
@ 11,47 say 'Accur' get loc:accur
@ 11,64 say 'Ref' get loc:ref
@ 12,3 say 'Date' get date
@ 12,21 say 'Driller' get driller
@ 12,52 say 'Inspector' get insp
@ 13,3 say 'Loc Bor Log' get loc:blog
@ 13,30 say 'Loc Drill Log' get loc:dlog
@ 14,3 say 'Loc Samples' get loc:sam
@ 14,45 say 'Data Status' get data:stat
@ 15,3 say 'Purpose' get purpose
@ 16,3 say 'Top of Hole Elev' get top:hole
@ 16,35 say 'Elev Accur  get el:accur
@ 16,60 say 'Depth' get depth
@ 17,3 say 'Days to Drill Hole' get days:dril
*
READ
return
```

```
*  CHECKS FOR DUPLICATE BORING NUMBERS AND LISTS FROM BORSIDI  BORCHECK.PRG
*  FILE IS BORCHECK.PRG
*
erase
set exact on
store 'A' to ans
store 'N' to again
*
DO WHILE AGAIN <> 'S'
*
accept ' Enter Boring Number          to bornum
store !(bornum) to bornum
*
store 0 to num
use BORSID INDEX BORSIDN
go bottom
 if # = 0
  store -1 to num
  STORE 'S' TO AGAIN
  LOOP
 endif
   if # <> 0
     store sid to borsidm
     use borsid index borsidi
     find &bornum
       do while borid = bornum .and. .not. eof
         store num + 1 to num
         skip
       enddo
   endif
*
 IF num >= 1
  @ 3,3 say 'No. of duplicate boring numbers ='
  @ 3,37 say num
accept 'Do you need project info. for duplicate borings? Enter Y or N 'to ans
store !(ans) to ans
   DO WHILE ans <> 'N' .AND. ans <> 'Y'
     accept '    Invalid answer, enter Y or N' to ans
     store !(ans) to ans
   ENDDO
 ENDIF
*
ERASE
*
 if ans = 'Y'
  GO TOP
  FIND &BORNUM
  store 3 to lno
   do while BORID = BORNUM .and. .not. eof
    @ lno,3 say 'Boring No:' get BORID
    @ lno+1,3 say 'Project ' get PROJ:NAME
    @ lno+2,3 say 'Site '    get SITE:NAME
    @ lno+3,3 say 'Project Description ' get PROJ:DESC
    @ lno+4,3 say 'Boring ID' get SID
    store lno+6 to lno
```

```
     SKIP
      if lno > 20 .and. borid = bornum
        remark    Press any key to continue.
        wait
        erase
        store 2 to lno
       endif
    enddo
     accept '   Do you want to reenter boring number? Enter Y or N ' to again
     store !(again) to again
      do while again <> 'N' .AND. again <> 'Y'
        accept ' Invalid answer, enter Y or N ' to again
        store !(again)to again
      enddo
 ENDIF
*
 if again = 'Y'
  STORE  N' TO ans
  STORE 'N' TO again
  ERASE
  loop
 endif
  IF NUM = 0 .OR. again = 'N'
    STORE 'N' TO ANS
    store 'S' to again
  ENDIF
ENDDO
set exact off
*
USE &BFILE
*
return
```

```
*  looks for entered boring number    BORFIND.PRG
*    USED ONLY TO FIND EXISTING BORING NUMBER
erase
SET EXACT ON
STORE 'T' TO again
SET FORMAT TO SCREEN
SET SCREEN ON
*
do while again <> 'S'
*
accept ' Enter Boring Number       '     to bornum
STORE !(BORNUM) TO BORNUM
*
use BORSID INDEX BORSIDI
FIND &BORNUM
STORE 0 TO NUM
DO WHILE BORID = BORNUM .and. .not. eof
  STORE NUM + 1 TO NUM
  SKIP
ENDDO
*
IF num > 1
  erase
  @ 1,3 say 'No. of duplicate boring numbers ='
  @ 1,37 say num
 FIND &BORNUM
REMARK       NOTE BORING ID WHEN YOU SEE THE ONE YOU WANT.
  store 3 to lno
  STORE '1' TO A
  DO WHILE BORID = BORNUM .and. .not. eof
    @ lno,3 say 'Boring No:' get BORID
    @ lno+1,3 say 'Project ' get proj:name
    @ lno+2,3 say 'Site '    get site:name
    @ lno+3,3 say 'Project Description ' get proj:desc
    @ lno+4,3 say 'Boring ID' get sid
    STORE SID TO SIDM&A
    STORE A + '1' TO A
    store lno+6 to lno
   SKIP
      if lno > 20 .AND. BORID = BORNUM
       REMARK           Press any key to continue
      WAIT
       erase
       store 2 to lno
      endif
 ENDDO
store 'B' to valid
DO WHILE valid <> 'A'
   INPUT       ' Enter the boring ID for the boring you want.     to borsidm
     STORE 0 TO GOOD
     STORE 1 TO TRY
     STORE  1  TO A
       DO WHILE TRY <= NUM
         IF BORSIDM = SIDM&A
           STORE 1 TO GOOD
```

```
          ELSE
            STORE A + '1' TO A
          ENDIF
           STORE TRY + 1 TO TRY
        ENDDO
          IF GOOD = 0
            REMARK    ERROR IN YOUR ID ENTRY, PLEASE TRY AGAIN
            LOOP
          ENDIF
   USE BORSID INDEX BORSIDN
   store str(borsidm,5,0) to borsidc
   find '&borsidc'
  if # = 0
    remark   Error in your entry, please reenter valid boring ID
    loop
  else
    store 'A' to valid
  endif
ENDDO
   store top:hole to topelm
   store proj:name to projm
   store site:name to sitem
   store  'S' to again
   RELEASE LNO
ENDIF
*
if num = 0
  erase
  remark    CANNOT LOCATE YOUR BORING NUMBER.
?
  accept                ' Enter C to continue or S to stop'   to again
   store !(again) to again
     if again = 'C'
       loop
     else
       store 'Q' to action
     endif
endif
  IF NUM = 1
    find &bornum
    STORE SID TO BORSIDM
    STORE STR(BORSIDM,5,0) TO BORSIDC
    STORE TOP:HOLE TO TOPELM
    store proj:name to projm
    store site:name to sitem
    STORE 'S' TO AGAIN
  ENDIF
ENDDO
SET EXACT OFF
*
RELEASE VALID
RELEASE A
RELEASE GOOD
RELEASE TRY
RELEASE ALL LIKE SIDM?
USE &BFILE
*
return
```

```
* ENTRY OR EDIT OF BORING DATA (all files, except bormain.dbf)  BORENTRM.PRG
SAVE TO MEMVAR
set format to screen
erase
store 0 to recno
store 'Y  to ans
store '9' to action
USE &BLAST
GO BOTT
STORE # TO LASTNO
DO &BORPRNT
USE &BFILE
do while action <> 'G'
* for new data
if '(action) = '1'
  do BORFIND
   if action = '@'
    store 'G' to action
    loop
   else
    append blank
    replace BORID with bornum
    replace SID with borsidm
  STORE # TO RECNO
  STORE STR(SID,5,0) TO BORSIDC
  USE BORSID INDEX BORSIDN
  FIND '&BORSIDC'
  STORE TOP:HOLE TO TOPELM
  USE &BFILE
  GO RECNO
    do &BSCREEN
    STORE # TO RECNO
    @ 17,3
   DO WHILE ans = 'Y'
    accept '     Enter more of same data for same hole no., Y or N ?' to ans
      store '(ans) to ans
     if ans = 'Y'
       append blank
              replace borid with bornum
              replace sid with borsidm
              STORE # TO RECNO
              STORE STR(SID,5,0) TO BORSIDC
              USE BORSID INDEX BORSIDN
              FIND '&BORSIDC'
              STORE TOP:HOLE TO TOPELM
              USE &BFILE
              GO RECNO
              DO &BSCREEN
              STORE # TO RECNO
          @ 17,3
       loop
     else
       store 'N  to ans
     endif
   ENDDO
```

```
  endif
 store '9' to action
endif
* for editing of data just entered
if !(action) = '2'
  if recno = 0
    USE &BLAST
    go bottom
    STORE # TO RECNO
    USE &BFILE
    GO RECNO
  else
    go recno
  endif
  STORE STR(SID,5,0) TO BORSIDC
  USE BORSID INDEX BORSIDN
  FIND '&BORSIDC'
  STORE TOP:HOLE TO TOPELM
  USE &BFILE
  GO RECNO
  DO &BSCREEN
  store '9' to action
endif
* for finding another record in same file
if !(action) = '3'
  do BORFIND
    if action = 'Q'
      store 'G' to action
      loop
    endif
      if BFILE = 'BORRSL INDEX BORRSLI'
        find '&borsidc'
        store # to recno
      else
        find &bornum
         DO WHILE BORID = BORNUM .AND. .NOT. EOF
           IF SID = BORSIDM
             store # to recno
             STORE  NONE' TO BORNUM
             LOOP
           ELSE
             SKIP
           ENDIF
         ENDDO
      endif
    ERASE
      IF RECNO = 0
        SET FORMAT TO SCREEN
        @ 1,5 SAY  NO DATA FOR THIS BORING, THIS IS THE LAST RECORD
        STORE LASTNO TO RECNO
      ENDIF
    GO RECNO
    DO &BORPRNT
    STORE '9' TO ACTION
    loop
```

```
endif
* skip ahead one record
if !(action) = '4'
  skip +1
  store # to recno
  ERASE
  DO &BORPRNT
  STORE '9' TO ACTION
  loop
endif
* skip back one record
if !(action) = '5'
  skip -1
  store # to recno
  ERASE
  DO &BORPRNT
  STORE '9' TO ACTION
  loop
endif
* to print a record
if !(action) = '6'
 if recno = 0
  GO LASTNO
  store # to recno
 else
  go recno
 endif
  do &BORPRNT
  store '9' to action
  erase
  DO &BORPRNT
  loop
endif
* exit to previous menu
if !(action) = '7'
  store 'G' to action
  loop
endif
* display submenu
if !(action) = '9'
 @ 17,3 say '------------------------------------------------------------'
   DO CASE
     case continue = '2'
      @ 18,3 say 'TO ENTER, REVIEW, EDIT, OR PRINT SOIL & ROCK LAYER DATA'
     case continue = '3'
      @ 18,3 say 'TO ENTER, REVIEW, EDIT, OR PRINT DRILLING INTERVAL DATA'
     case continue = '4'
      @ 18,3 say 'TO ENTER, REVIEW, EDIT, OR PRINT SPLIT SPOON TEST DATA'
     case continue = '5'
      @ 18,3 say 'TO ENTER, REVIEW, EDIT, OR PRINT TEST SUMMARY INFO'
     case continue = '6'
      @ 18,3 say 'TO ENTER, REVIEW, EDIT, OR PRINT TEST RESULTS'
   ENDCASE
  @ 19,5 SAY '1 = enter new data,  2 = edit record shown above          '
  @ 20,5 say '3 = review or edit data for a different boring number,    '
```

```
  @ 21,5 say '4 = skip ahead one record,  5 = skip back one record
  @ 22,5 say '6 = print a record,  7 = exit back to previous menu.
*
  accept '                ENTER ACTION NUMBER' to action
*
endif
*
ENDDO
*
RELEASE ALL
RESTORE FROM MEMVAR
return
```

```
* PRINT FORMAT FOR FEATURE DATA,        BORFEAPT.PRG
IF ACTION = '6'
  SET FORMAT TO PRINT
ELSE
  SET FORMAT TO SCREEN
ENDIF
 DO CASE
  CASE RECNO = 0
   @ 3,6 SAY 'LAST SOIL OR ROCK LAYER CLASS. & DESCR. RECORD ENTERED'
  CASE ACTION = '3'
   @ 3,6 SAY 'FIRST SOIL OR ROCK LAYER CLASS. & DESCR. FOR SELECTED BORING'
  CASE RECNO <> 0
   @ 3,6 SAY 'COPY OF SELECTED SOIL OR ROCK LAYER CLASS. & DESCR. RECORD'
 ENDCASE
@ 5,15 say 'Hole No.:'
@ 5,25 SAY borid
@ 5,40 say 'Hole ID:'
@ 5,49 SAY sid
@ 7,3 say 'Depth to top of strata:'
@ 7,27 SAY fea:depth
@ 7,40 say 'Elev at top of strata:'
@ 7,63 SAY feat:elev
@ 9,3 say 'Soil classification or rock name:'
@ 9,37 SAY feat:name
@ 9,50 say 'Date:'
@ 9,56 SAY feat:date
@ 11,3 say 'Description of strata:'
@ 11,26 SAY feat:desc
@ 12,3 say ' '
*
IF ACTION = '6'
eject
ENDIF
return
```

```
* SCREEN FORMAT FOR FEATURE DATA,     BORFEASN.PRG
ERASE
SET FORMAT TO SCREEN
set SCREEN on
@ 1,6 SAY 'DATA ENTRY FOR SOIL OR ROCK LAYER CLASS. & DESCRIPTION'
@ 2,2 SAY 'Use arrow keys to move around form, or CTRL E = up, CTRL X = down'
@ 3,3 say 'CTRL S = left, CTRL D = right, RETURN to skip down or show rest of'
@ 4,3 say '  the form, and CTRL C to skip out of the form and end.'
@ 6,5 SAY 'NOTE:  Repeat this form as needed; enter depth noted on log sheet'
@ 7,12 say ' or approx. depth where entry shown.  Use next 0.01 ft for depth'
@ 8,12 say ' to continue a long description.'
@ 10,15 say 'Hole No.:'
@ 10,25 say borid
@ 10,45 say 'Hole ID:'
@ 10,54 say sid
IF ACTION = '2'
STORE FEA:DEPTH TO BDEPTH
ENDIF
@ 12,3 say 'Depth to top of strata' get fea:depth
read
IF ACTION = '1'
repl feat:elev with topelm - fea:depth
ENDIF
*
IF ACTION = '2'
 IF fea:depth <> bdepth
  repl feat:elev with topelm - fea:depth
 ENDIF
ENDIF
@ 12,45 say 'Elev at top of strata:'
@ 12,68 say feat:elev
@ 14,2 say 'Soil classification or rock name' get feat:name
@ 14,47 say 'Date, if appropriate' get feat:date
@ 16,3 say 'Description of strata' get feat:desc
*
read
  REPL FEAT:ELEV WITH TOPELM - FEA:DEPTH
return
```

```
* PRINT FORMAT FOR BORING SEGMENT DATA,     BORSEGPT.PRG
IF ACTION = '6'
  SET FORMAT TO PRINT
ELSE
  SET FORMAT TO SCREEN
ENDIF
 DO CASE
  CASE RECNO = 0
   @ 3,6 SAY 'LAST DRILLING INTERVAL DATA RECORD ENTERED'
  CASE ACTION = '3'
   @ 3,6 SAY 'FIRST DRILLING INTERVAL DATA RECORD FOR SELECTED BORING'
  CASE RECNO <> 0
   @ 3,6 SAY 'COPY OF SELECTED DRILLING INTERVAL DATA RECORD'
 ENDCASE
@ 5,15 say 'Hole No.:'
@ 5,25 SAY borid
@ 5,40 say 'Hole ID:'
@ 5,49 SAY sid
@ 7,3 say 'Depth to top of interval:'
@ 7,29 SAY bor:depth
@ 7,43 say 'Elev at top of interval:'
@ 7,68 SAY bor:elev
@ 9,3 say 'Type of drilling or bit:'
@ 9,28 SAY bor:tool
@ 9,50 say 'Size of hole:'
@ 9,64 SAY bor:size
@ 10,3 say ' '
*
IF ACTION = '6'
eject
ENDIF
return
```

```
* SCREEN FORMAT FOR BORING SEGMENT DATA, BORSEGSN.PRG
ERASE
SET FORMAT TO SCREEN
set SCREEN on
@ 1,6 SAY 'DATA ENTRY FOR DRILLING INTERVAL DATA'
@ 2,2 SAY 'Use arrow keys to move around form, or CTRL E = up, CTRL X = down'
@ 3,3 say 'CTRL S = left, CTRL D = right, RETURN to skip down or show rest of'
@ 4,3 say '  the form, and CTRL C to skip out of the form and end.'
@ 6,15 say 'Hole No.:'
@ 6,25 say borid
@ 6,45 say 'Hole ID:'
@ 6,54 say sid
IF ACTION = '2'
STORE BOR:DEPTH TO BDEPTH
ENDIF
@ 8,3 say 'Depth to top of interval' get bor:depth
READ
IF ACTION = '1'
repl bor:elev with topelm - bor:depth
ENDIF
*
IF ACTION = '2'
 IF BOR:DEPTH <> BDEPTH
  REPL BOR:ELEV WITH TOPELM - BOR:DEPTH
 ENDIF
ENDIF
@ 8,43 say 'Elev at top of interval:'
@ 8,68 say bor:elev
@ 10,3 say 'Type of drilling or bit' get bor:tool
@ 10,50 say 'Size of hole' get bor:size
*
read
REPL BOR:ELEV WITH TOPELM - BOR:DEPTH
return
```

```
* PRINT FORMAT FOR BLOW COUNT DATA, BORSPTPT.PRG
IF ACTION = '6'
  SET FORMAT TO PRINT
ELSE
  SET FORMAT TO SCREEN
ENDIF
 DO CASE
  CASE RECNO = 0
   @ 3,6 SAY 'LAST BLOW COUNT RECORD ENTERED'
  CASE ACTION = '3'
   @ 3,6 SAY 'FIRST BLOW COUNT RECORD FOR SELECTED BORING'
  CASE RECNO <> 0
   @ 3,6 SAY  COPY OF SELECTED BLOW COUNT RECORD'
 ENDCASE
@ 5,15 say 'Hole No.:'
@ 5,25 SAY borid
@ 5,45 say 'Hole ID:'
@ 5,54 SAY sid
@ 7,3 say 'Depth for blow count:'
@ 7,25 SAY blo:depth
@ 7,43 say  Elev of blow count:'
@ 7,63 SAY blow:elev
@ 9,3 say 'Blow count, N value:'
@ 9,24 SAY blow:cts
@ 11,3 say 'Remarks for blow count:'
@ 11,27 SAY blow:rmks
@ 12,3 say ' '
*
IF ACTION = '6'
eject
ENDIF
return
```

```
* SCREEN FORMAT FOR BLOW COUNT DATA, BORSPTSN.PRG
ERASE
SET FORMAT TO SCREEN
set SCREEN on
@ 1,6 SAY 'DATA ENTRY FOR BLOW COUNT DATA'
@ 2,2 SAY 'Use arrow keys to move around form, or CTRL E = up, CTRL X = down'
@ 3,3 say 'CTRL S = left, CTRL D = right, RETURN to skip down or show rest of'
@ 4,3 say '  the form, and CTRL C to skip out of the form and end.'
@ 6,15 say 'Hole No.:'
@ 6,25 say borid
@ 6,45 say 'Hole ID:'
@ 6,54 say sid
IF ACTION = '2'
STORE BLO:DEPTH TO BDEPTH
ENDIF
@ 8,3 say 'Depth for blow count' get blo:depth
READ
IF ACTION = '1'
repl blow:elev with topelm - blo:depth
ENDIF
*
IF ACTION = '2'
 IF BLO:DEPTH <> BDEPTH
   REPL BLOW:ELEV WITH TOPELM - BLO:DEPTH
 ENDIF
ENDIF
@ 8,43 say 'Elev of blow count:'
@ 8,63 say blow:elev
@ 10,3 say 'Blow count, N value' get blow:cts
@ 12,3 say 'Remarks for blow count' get blow:rmks
*
read
REPL BLOW:ELEV WITH TOPELM - BLO:DEPTH
return
```

```
* PRINT FORMAT FOR FIELD OR LAB TEST SUMMARY,     BORTSTPT.PRG
IF ACTION = '6'
  SET FORMAT TO PRINT
ELSE
  SET FORMAT TO SCREEN
ENDIF
 DO CASE
  CASE RECNO = 0
   @ 3,6 SAY 'LAST FIELD OR LAB TEST SUMMARY RECORD ENTERED'
  CASE ACTION = '3'
   @ 3,6 SAY 'FIRST FIELD OR LAB TEST SUMMARY RECORD FOR SELECTED BORING'
  CASE RECNO <> 0
   @ 3,6 SAY 'COPY OF SELECTED FIELD OR LAB TEST SUMMARY RECORD'
 ENDCASE
@ 5,15 say 'Hole No.:'
@ 5,25 SAY borid
@ 5,40 say 'Hole ID:'
@ 5,49 SAY sid
@ 7,3 say 'Name of test:'
@ 7,17 SAY typ:name
@ 9,3 say 'Number of tests:'
@ 9,20 SAY typ:num
@ 9,30 say 'Location of data:'
@ 9,48 SAY typ:loc
@ 10,3 say ' '
*
IF ACTION = '6
eject
ENDIF
return
```

```
* SCREEN FORMAT FOR FIELD OR LAB TEST SUMMARY,     BORTSTSN.PRG
ERASE
SET FORMAT TO SCREEN
set SCREEN on
@ 1,6 SAY 'DATA ENTRY FOR FIELD OR LAB TEST SUMMARY'
@ 2,2 SAY 'Use arrow keys to move around form, or CTRL E = up, CTRL X = down'
@ 3,3 say 'CTRL S = left, CTRL D = right, RETURN to skip down, '
@ 4,3 say '  and CTRL C to skip out of the form and end.'
@ 6,15 say 'Hole No.:'
@ 6,25 say borid
@ 6,45 say 'Hole ID:'
@ 6,54 say sid
@ 8,3 say 'Name of test' get typ:name
@ 10,3 say 'Number of tests' get typ:num
@ 12,3 say 'Location of data' get typ:loc
*
read
return
```

```
* PRINT FORMAT FOR TEST RESULTS DATA,      BORRSLPT.PRG
IF ACTION = '6'
  SET FORMAT TO PRINT
ELSE
  SET FORMAT TO SCREEN
ENDIF
 DO CASE
  CASE RECNO = 0
   @ 3,6 SAY 'LAST TEST RESULTS RECORD ENTERED'
  CASE ACTION = '3'
   @ 3,6 SAY 'FIRST TEST RESULTS RECORD FOR SELECTED BORING'
  CASE RECNO <> 0
   @ 3,6 SAY 'COPY OF SELECTED TEST RESULTS RECORD'
 ENDCASE
@ 5,15 say 'Hole No.:'
@ 5,25 SAY borid
@ 5,40 say 'Hole ID:'
@ 5,49 SAY sid
@ 7,3 SAY 'Test Name:'
@ 7,14 SAY test:name
@ 7,31 say 'Date:'
@ 7,37 SAY test:date
@ 7,55 SAY 'Material:'
@ 7,65 SAY test:mat
@ 9,3 say 'Depth:'
@ 9,10 SAY tst:depth
@ 9,45 say 'Elevation:'
@ 9,55 SAY test:elev
@ 11,3 say 'Result 1:'
@ 11,13 SAY test:res1
@ 11,35 say 'Result 3:'
@ 11,45 SAY test:res3
@ 13,3 say 'Result 2:'
@ 13,13 SAY test:res2
@ 13,35 say 'Result 4:'
@ 13,45 SAY test:res4
@ 15,3 say 'Remarks:'
@ 15,12 SAY remarks
@ 16,3 say ' '
*
IF ACTION = '6'
eject
ENDIF
return
```

```
* SCREEN FORMAT FOR TEST RESULTS DATA,     BORRSLSN.PRG
ERASE
SET FORMAT TO SCREEN
set SCREEN on
@ 1,6 SAY 'DATA ENTRY FOR TEST RESULTS'
@ 2,2 SAY 'Use arrow keys to move around form, or CTRL E = up, CTRL X = down'
@ 3,3 say 'CTRL S = left, CTRL D = right, RETURN to skip down or show rest of
@ 4,3 say '  form, and CTRL C to skip out of the form and end.'
@ 6,15 say 'Hole No.:'
@ 6,25 say borid
@ 6,45 say 'Hole ID:'
@ 6,54 say sid
@ 8,3 SAY 'Test Name' get test:name
@ 8,31 say 'Date' get test:date
@ 8,55 SAY 'Material' get test:mat
IF ACTION = '2'
STORE TST:DEPTH TO BDEPTH
ENDIF
@ 10,3 say  Depth' get tst:depth
READ
IF ACTION = '1'
repl test:elev with topelm - tst:depth
ENDIF
*
IF ACTION = '2'
 IF TST:DEPTH <> BDEPTH
  REPL TEST:ELEV WITH TOPELM - TST:DEPTH
 ENDIF
ENDIF
@ 10,45 say 'Elevation:'
@ 10,56 say test:elev
@ 12,3 say 'Result 1' get test:res1
@ 14,3 say 'Result 2' get test:res2
@ 12,35 say 'Result 3' get test:res3
@ 14,35 say 'Result 4' get test:res4
@ 16,3 say 'Remarks' get remarks
*
read
REPL TEST:ELEV WITH TOPELM - TST:DEPTH
return
```

```
* command file to find boring numbers in a given coordinate area BORLOC.PRG
SET TALK OFF
SAVE TO MEMVAR
REMARK    ENTER TWO SETS OF NS,EW COORD. TO DEFINE AREA OF INTEREST.
INPUT 'INPUT FIRST NS COORD.   ' TO NS1
INPUT  CORRESPONDING EW COORD.' TO EW1
INPUT 'INPUT SECOND NS COORD.  ' TO NS2
INPUT  CORRESPONDING EW COORD.' TO EW2
IF NS1 > NS2
  STORE NS1 TO NSHI
  STORE EW1 TO EWHINS
  STORE NS2 TO NSLO
  STORE EW2 TO EWLONS
ELSE
  STORE NS2 TO NSHI
  STORE EW2 TO EWHINS
  STORE NS1 TO NSLO
  STORE EW1 TO EWLONS
ENDIF
RELEASE ALL LIKE ??1
RELEASE ALL LIKE ??2
IF EWHINS > EWLONS
 STORE EWHINS TO EWHI
 STORE EWLONS TO EWLO
ELSE
 STORE EWLONS TO EWHI
 STORE EWHINS TO EWLO
ENDIF
RELEASE EWLONS
RELEASE EWHINS
STORE STR(NSLO,10,2) TO NSLOC
STORE STR(NSHI,10,2) TO NSHIC
USE BORSID INDEX BORSIDL
COPY STRU TO BORLOC
SELE PRIM
USE BORLOC
SELE SECO
USE BORSID INDEX BORSIDL
DO WHILE .NOT. EOF
 IF LOC:NS >= NSLO .AND. LOC:NS <= NSHI .AND. LOC:EW >= EWLO;
   .AND. LOC:EW <= EWHI
   COPY TO BORTMP NEXT 1
   SELE PRIM
   APPEND FROM BORTMP
 ENDIF
 SELE SECO
 SKIP
ENDDO
SET FORMAT TO SCREEN
ERASE
SELE PRIM
GO TOP
store 'N' to ans
DO BORCORPT
```

```
ACCEPT    'DO YOU WANT A PRINTED COPY? ENTER Y OR N' TO ANS
store !(ans) to ans
IF ANS = 'Y'
  SET FORMAT TO PRINT
  SET MARGIN TO 5
  GO TOP
  DO BORCORPT
  SET PRINT ON
  ?? CHR(27)+"@"
  SET PRINT OFF
ENDIF
ACCEPT    DO YOU WANT A LIST OF BORING LOCATIONS? ENTER Y OR N' TO ANS
store !(ans) to ans
IF ANS = 'Y
DO BORMAP
ENDIF
CLEAR
RESTORE FROM MEMVAR
RETURN
```

```
*  PRINT COPY OF BORID AND COORD ON SCREEN OR PRINTER   BORCORPT.PRG
@ 2,3 SAY 'LIST OF BORINGS IN AREA WITHIN GIVEN COORDINATES'
IF ANS <> 'N'
 SET PRINT ON
 ?? CHR(15)
 SET PRINT OFF
ENDIF
@ 3,3 SAY 'NS COORD:'
@ 3,13 SAY NSLO
@ 3,30 SAY 'EW COORD:'
@ 3,40 SAY EWLO
@ 4,13 SAY NSHI
@ 4,40 SAY EWHI
@ 6,2 SAY 'BORING NO.'
@ 6,13 SAY '  SID'
@ 6,19 SAY ' NS COORD.'
@ 6,30 SAY ' EW COORD.'
 IF ANS <> 'N'
  @ 6,55 SAY 'PROJECT'
  @ 6,95 SAY 'SITE'
 ENDIF
STORE 8 TO LNO
DO WHILE .NOT. EOF
  @ LNO,2 SAY BORID
  @ LNO,13 SAY SID
  @ LNO,19 SAY LOC:NS
  @ LNO,30 SAY LOC:EW
   IF ANS = 'N'
    STORE LNO+1 TO LNO
    @ LNO,5 SAY 'PROJ:'
    @ LNO,11 SAY PROJ:NAME
    @ LNO+1,5 SAY 'SITE:'
    @ LNO+1,11 SAY SITE:NAME
    STORE LNO+2 TO LNO
       if lno >= 23
        store 2 to lno
        remark    Hit any key to continue
        wait
        erase
       endif
   ELSE
    @ LNO,41 SAY PROJ:NAME
    @ LNO,83 SAY SITE:NAME
    STORE LNO+1 TO LNO
   ENDIF
  SKIP
ENDDO
STORE LNO+1 TO LNO
IF ANS <> 'Y'
@ LNO+1,3 SAY '  '
ENDIF
SET FORMAT TO SCREEN
RETURN
```

```
* create file of coordinates for given project or site and plot. BORCORD.PRG
SAVE TO MEMVAR
STORE 'T' TO TRY
*  MAIN DO LOOP
DO WHILE TRY <> 'Z'
REMARK   PLOT OF BORING LOCATIONS FOR GIVEN PROJECT OR SITE
ACCEPT  'DO YOU WANT A PLOT FOR A PROJECT NAME OR SITE NAME? ENTER P OR S';
 TO WANT
STORE !(WANT) TO WANT
 IF WANT = 'P'
  ACCEPT  'ENTER PROJECT NAME' TO PROJM
  STORE !(PROJM) TO PROJM
 ELSE
  STORE  S' TO WANT
  ACCEPT  'ENTER SITE NAME' TO SITEM
  STORE !(SITEM) TO SITEM
 ENDIF
use borsid
copy stru to borloc
sele prim
use borsid index borsidp
sele seco
use borloc
sele prim
if want = 'P'
  locat for !(proj:name) = projm
 else
  loca for !(site:name) = sitem
endif
STORE 0 TO RECOP
do while .not. eof
  copy to bortmp next 1
  sele seco
  append from bortmp
 STORE RECOP + 1 TO RECOP
  sele prim
  cont
enddo
  IF RECOP = 0
   IF WANT = 'P'
    REMARK  DID NOT FIND YOUR PROJECT, DO YOU WANT A LIST TO REENTER NAME FROM
   ELSE
    REMARK  DID NOT FIND YOUR SITE, DO YOU WANT A LIST TO REENTER NAME FROM
   ENDIF
    ACCEPT 'ENTER Y FOR YES AND N FOR NO' TO ANS
    STORE !(ANS) TO ANS
   IF ANS = 'Y
     DO BORPROJ
     clear
     restore from memvar
     LOOP
   ELSE
     STORE  Z' TO TRY
     LOOP
   ENDIF
```

```
  ENDIF
 ENDIF
sele prim
use
sele seco
use
DO BORMAP
 STORE 'Z' TO TRY
ENDDO
* END OF MAIN DO LOOP
SET FORMAT TO SCREEN
clear
RESTORE FROM MEMVAR
return
```

```
*  command file to print boring location map  BORMAP.PRG
* modified 03/07/85 to set scales from 400 to 2000 ft/in for 8.5 or 14 in
*  paper and use A-Z, a-z, and 0-9 for boring location legend.
erase
SAVE TO MEMVAR2
RELEASE ALL EXCEPT WANT
set screen on
accept  'DOES YOU PRINTER HAVE WIDE PAPER? Y OR N' TO ANS
set screen off
STORE !(ANS) TO ANS
 IF ANS = 'Y'
  STORE 12 TO PAPER
 ELSE
  STORE 7 TO PAPER
 ENDIF
set screen on
remark    This takes a few minutes, so hang tight.
set screen off
USE BORLOC
STORE LOC:NS TO NSHI
STORE LOC:NS TO NSLOW
STORE LOC:EW TO EWLOW
STORE LOC:EW TO EWHI
  DO WHILE .NOT. EOF
    SKIP
      IF EWLOW>LOC:EW
        STORE LOC:EW TO EWLOW
      ENDIF
        IF EWHI<LOC:EW
          STORE LOC:EW TO EWHI
        ENDIF
      IF NSLOW>LOC:NS
        STORE LOC:NS TO NSLOW
      ENDIF
        IF NSHI<LOC:NS
          STORE LOC:NS TO NSHI
        ENDIF
  ENDDO
go top
* round off to next highest or lowest 100 ft
store int(nshi/100+0.5)*100 to nshi
store int(nslow/100-0.5)*100 to nslow
store int(ewhi/100+0.5)*100 to ewhi
store int(ewlow/100-0.5)*100 to ewlow
* determine scales for NS and EW
store nshi-nslow to nsmaxdif
store ewhi-ewlow to ewmaxdif
store int(nsmaxdif/2000 + 0.5)*100 to nsscale
if ewmaxdif > 10000
 store int((ewmaxdif/paper)/1000 + 0.5)*1000 to ewscale
else
 store int((ewmaxdif/paper)/100 + 0.5)*100 to ewscale
endif
 if nsscale > ewscale
  store nsscale to scale
```

```
 else
  store ewscale to scale
 endif
* set up scale increments for NS and EW
store 'chr(27)+"0"' to LIN8
store 'chr(27)+"A"+chr(6)' to LIN12
 DO CASE
  CASE SCALE <= 400
   store lin8 to linsp
   store 25 to ewinc
   store 50 to nsinc
   STORE 400 TO SCALE
  CASE SCALE > 400 .AND. SCALE <= 600
   store lin12 to linsp
   store 35 to ewinc
   store 50 to nsinc
   STORE 600 TO SCALE
  CASE SCALE > 600 .AND. SCALE <= 800
   store lin8 to linsp
   store 45 to ewinc
   store 100 to nsinc
   STORE 800 TO SCALE
  CASE SCALE > 600 .AND. SCALE <= 1000
   store lin8 to linsp
   store 60 to ewinc
   store 125 to nsinc
   STORE 1000 TO SCALE
  CASE SCALE > 1000 .AND. SCALE <= 1200
   store lin12 to linsp
   store 70 to ewinc
   store 100 to nsinc
   STORE 1200 TO SCALE
  CASE SCALE > 1200 .AND. SCALE <= 1500
   store lin12 to linsp
   store 90 to ewinc
   store 125 to nsinc
   STORE 1500 TO SCALE
  CASE SCALE > 1500 .AND. SCALE <= 1800
   store lin12 to linsp
   store 105 to ewinc
   store 150 to nsinc
   STORE 1800 TO SCALE
  CASE SCALE > 1500 .AND. SCALE <= 2000
   store lin8 to linsp
   store 115 to ewinc
   store 250 to nsinc
   STORE 2000 TO SCALE
 ENDCASE
 if scale > 2000
  set screen on
  remark   SCALE GREATER THAN 2000 FT/IN, CANNOT DO MAP THIS SCALE.
  SET SCREEN OFF
  RESTORE FROM MEMVAR2
  CANCEL
 endif
```

```
GO TOP
DO WHILE .NOT. EOF
  STORE INT(LOC:NS/NSINC)*NSINC TO NSEVEN
  REPLACE LOC:NS WITH NSEVEN
  STORE INT(LOC:EW/EWINC)*EWINC TO EWEVEN
  REPLACE LOC:EW WITH EWEVEN
  SKIP
ENDDO
GO TOP
SORT ON LOC:EW TO SORTBOR
USE SORTBOR
SORT ON LOC:NS TO BORSORT DESCENDING
USE BORSORT
DELETE FILE SORTBOR
GO TOP
go top
STORE INT((NSHI+(2*NSINC))/NSINC+0.5)*NSINC TO NSHCORD
STORE INT((NSLOW-(2*NSINC))/NSINC-0.5)*NSINC TO NSLCORD
STORE INT((EWHI+(2*EWINC))/EWINC+0.5)*EWINC TO EWHCORD
STORE INT((EWLOW-(2*EWINC))/EWINC-0.5)*EWINC TO EWLCORD
STORE EWHCORD-EWLCORD TO EWLHDIF
SET MARGIN TO 0
SET FORMAT TO PRINT
EJECT
SET EJECT OFF
@ 1,3 SAY 'PLOT OF BORING LOCATIONS FOR'
 IF WANT = 'S'
@ 1,32 SAY 'SITE:'
@ 1,38 SAY SITE:NAME
 ELSE
@ 1,32 SAY 'PROJ.:'
@ 1,39 SAY PROJ:NAME
 ENDIF
@ 2,5 SAY 'EAST-WEST COORD. (VERTICAL ORDINATE IS N-S COORD.)'
@ 2,58 SAY 'SCALE: 1 IN ='
@ 2,72 SAY SCALE USING '9999'
@ 2,77 SAY 'FT'
@ 3,0 SAY ' '
* set up printer to form length of 22 in. and scale for paper width
set print on
?? chr(27)+"C"+chr(0)+chr(22)
set print off
 if scale = 400 .and. ewhcord-ewlcord <= 2800 .and. paper = 7;
  .or. (ewhcord-ewlcord <= 4800 .and. paper = 12)
   SET PRINT ON
   ?? &LINSP
   SET PRINT OFF
 else
   SET PRINT ON
   ?? &LINSP
   ?? CHR(15)
   SET PRINT OFF
 endif
STORE NSHCORD TO NSCORD
* COL 8 IS START OF MAP BOARDER  ***  8 IS LEFT BOARDER ****
```

```
STORE 8 TO COL
STORE EWLCORD TO EWCORD
   DO WHILE EWCORD <= EWHCORD
    IF EWCORD = INT(EWCORD/100)*100
     @ 4,COL-3 SAY EWCORD USING '9999999'
     store col+10 to col
     store ewcord + (10*ewinc) to ewcord
    ELSE
     STORE EWCORD+EWINC TO EWCORD
     STORE COL+1 TO COL
    ENDIF
   ENDDO
STORE 6 TO L
STORE 8 TO COL
STORE EWLCORD TO EWCORD
STORE 1 TO INDEX
DO WHILE INDEX = 1
 @ L,COL-8 SAY NSHCORD using '9999999'
  DO WHILE EWCORD <= EWHCORD
    IF EWCORD = INT(EWCORD/100)*100
     @ L,COL SAY [+]
    ELSE
     @ L,COL SAY '|'
    ENDIF
   STORE COL+1 TO COL
   STORE EWCORD + EWINC TO EWCORD
  ENDDO
 STORE INDEX+1 TO INDEX
ENDDO
STORE 7 TO LINE
STORE 8 TO COL
STORE NSCORD-nsinc TO NSCORD
STORE 65 TO BORNO
STORE (EWHCORD-EWLCORD)/EWINC+COL TO MAXCOL
* start of main do loop  ****  main do loop ***
   DO WHILE .NOT. EOF
      IF NSCORD/(nsinc*10) = INT(NSCORD/(nsinc*10))
         @ LINE,COL-8 SAY NSCORD USING '9999999'
         @ LINE,COL SAY [+]
           ELSE
             @ LINE,COL SAY [-]
      ENDIF
       STORE 1 TO LASTLOC
        DO WHILE LOC:NS > NSCORD .and. .not. eof
             STORE (LOC:EW - EWLCORD)/ewinc TO XCOL
               IF LOC:EW-LASTLOC > ewinc
                 @ LINE,XCOL+8 SAY chr(borno)
                 replace pltno with borno
                  DO CASE
                   CASE BORNO = 90
                     store 97 to borno
                   CASE BORNO = 122
                     store 0 to borno
                   OTHERWISE
                     STORE BORNO TC BORNOL
```

```
                    STORE BORNO +1 TO BORNO
                  ENDCASE
                ELSE
                  if LOC:EW = LASTLOC
                   replace pltno with BORNOL
                  else
                    replace pltno with borno
                  endif
                ENDIF
               STORE LOC:EW TO LASTLOC
               SKIP
          ENDDO
              IF NSCORD/(nsinc*10) = INT(NSCORD/(nsinc*10))
                 @ LINE,MAXCOL+2 SAY [+]
                   ELSE
                     @ LINE,MAXCOL+2 SAY [-]
              ENDIF
        STORE LINE+1 TO LINE
        STORE NSCORD-nsinc TO NSCORD
           IF LINE = 120
            SET PRINT ON
            @ 120,0 SAY '
            SET PRINT OFF
             IF LINSP = LIN8
              SET PRINT ON
              ?? CHR(27)+"@"
              ?? CHR(27)+"j"+chr(24)
              ?? &LINSP
              ?? CHR(15)
             SET PRINT OFF
            ELSE
             SET PRINT ON
             ?? CHR(27)+"@"
             ?? CHR(27)+"j"+chr(36)
             ?? &LINSP
             ?? CHR(15)
             SET PRINT OFF
            ENDIF
             STORE 0 TO LINE
           ENDIF
     ENDDO
* end of main do loop              *** end main do loop ***
* CHECK FOR LINE NUMBER AND RESET TOP OF FORM
           IF LINE = 100
            SET PRINT ON
            @ 100,0 SAY ' '
            SET PRINT OFF
             IF LINSP = LIN8
              SET PRINT ON
              ?? CHR(27)+"@"
              ?? CHR(27)+"j"+chr(24)
              ?? &LINSP
              ?? chr(15)
              SET PRINT OFF
             ELSE
```

```
            SET PRINT ON
            ?? CHR(27)+"@"
            ?? CHR(27)+"j"+chr(36)
            ?? &LINSP
            ?? chr(15)
            SET PRINT OFF
           ENDIF
           STORE 1 TO LINE
         ENDIF
* print last line
STORE 8 TO COL
     IF NSCORD/(nsinc*10) = INT(NSCORD/(nsinc*10))
       @ LINE,0 SAY NSCORD using '9999999'
       @ LINE,COL SAY [+]
       @ LINE,MAXCOL+2 SAY [+]
     ELSE
       @ LINE,COL SAY [-]
       @ LINE,MAXCOL+2 SAY [-]
     ENDIF
 store line+1 to line
STORE EWLCORD TO EWCORD
STORE 1 TO INDEX
DO WHILE INDEX = 1
  DO WHILE EWCORD <= EWHCORD
    IF EWCORD = INT(EWCORD/100)*100
     @ LINE,COL SAY [+]
    ELSE
     @ LINE,COL SAY '|'
    ENDIF
   STORE COL+1 TO COL
   STORE EWCORD + EWINC TO EWCORD
  ENDDO
 STORE INDEX+1 TO INDEX
ENDDO
STORE 8 TO COL
store line+2 to line
STORE EWLCORD TO EWCORD
   DO WHILE EWCORD <= EWHCORD
    IF EWCORD = INT(EWCORD/100)*100
     @ LINE,COL-3 SAY EWCORD USING '9999999'
     store col+10 to col
     store ewcord + (10*ewinc) to ewcord
    else
     STORE EWCORD+EWINC TO EWCORD
     STORE COL+1 TO COL
    endif
   ENDDO
 store line+2 to line
 STORE 8 TO COL
   set print on
   ?? CHR(27)+"2"
   set print off
  IF SCALE = 400
   SET PRINT ON
   ?? CHR(15)
```

```
   SET PRINT OFF
  ENDIF
GO TOP
@ LINE+4,4 SAY [LEGEND:]
STORE 0 TO TOTBOR
STORE LINE+6 TO LINE
COUNT ALL TO NUMREC
STORE INT(NUMREC/2+0.5) TO JUMP
@ LINE,0 SAY 'POINT'
@ LINE,7 SAY 'BORING'
@ LINE,65 SAY 'POINT'
@ LINE,72 SAY 'BORING'
STORE LINE+1 TO LINE
@ LINE,1 SAY 'NO.'
@ LINE,7 SAY 'NUMBER'
@ LINE,21 SAY 'SID'
 IF WANT = 'P'
@ LINE,25 SAY 'SITE:'
 ELSE
@ LINE,25 SAY 'PROJ:'
 ENDIF
@ LINE,66 SAY 'NO.'
@ LINE,72 SAY 'NUMBER'
@ LINE,86 SAY 'SID'
 IF WANT = 'P'
@ LINE,90 SAY 'SITE:'
 ELSE
@ LINE,90 SAY 'PROJ:'
 ENDIF
STORE LINE+1 TO LINE
GO TOP
DO WHILE .NOT. EOF
 IF TOTBOR < NUMREC
  @ LINE,2 SAY chr(PLTNO)
  @ LINE,7 SAY BORID USING 'XXXXXXXXXX'
  @ LINE,19 SAY SID USING '99999'
    IF WANT = 'P'
     @ LINE,25 SAY SITE:NAME
    ELSE
     @ LINE,25 SAY PROJ:NAME
    ENDIF
  STORE TOTBOR+1 TO TOTBOR
  SKIP +JUMP
 ENDIF
 IF TOTBOR <= NUMREC-1
  @ LINE,67 SAY chr(PLTNO)
  @ LINE,72 SAY BORID USING 'XXXXXXXXXX'
  @ LINE,84 SAY SID USING '99999'
    IF WANT = 'P'
     @ LINE,90 SAY SITE:NAME
    ELSE
     @ LINE,90 SAY PROJ:NAME
    ENDIF
  STORE TOTBOR+1 TO TOTBOR
    IF TOTBOR = NUMREC
```

```
      STORE LINE+1 TO LINE
      SKIP
      LOOP
     ENDIF
   SKIP -(JUMP-1)
  ENDIF
   STORE LINE+1 TO LINE
ENDDO
@ LINE+1,3 SAY "NUMBER OF BORINGS ="
@ LINE+1,23 SAY NUMREC USING '99'
* @ LINE+1,31 SAY [**********************************************]
* @ LINE+2,31 SAY [*]
* if want = 'P'
* @ line+2,34 say 'PROJECT:'
* @ LINE+2,75 SAY '*'
* @ LINE+3,34 SAY PROJ:NAME
* ELSE
* @ LINE+2,34 SAY 'SITE:'
* @ LINE+2,75 SAY '*'
* @ LINE+3,34 SAY SITE:NAME
* ENDIF
* @ LINE+3,75 SAY [*]
* @ LINE+4,31 SAY [**********************************************]
* @ LINE+8,5 SAY "END OF BORING LOCATION PLOT"
@ LINE+9,0 SAY " "
use
RELEASE ALL
RESTORE FROM MEMVAR2
SET PRINT ON
?? CHR(27)+"@"
SET PRINT OFF
set format to screen
RETURN
```

```
* command file to plot 1 to 3 logs to desired vertical scale.  BORLOG3.PRG
*  modified 02/28/85 w.e. strohm   WESGR
ERASE
SAVE TO MEMVAR
RELEASE ALL
REMARK       BORING LOG PLOT PROGRAM FOR ONE TO THREE LOGS PER SHEET
REMARK         ON AN EPSON OR COMPATIBLE DOT MATRIX PRINTER
INPUT 'Enter the number or borings to plot: 1, 2, or 3 (14-in paper for 3)';
 TO NUMBOR
ACCEPT     'DOES PRINTER HAVE 14-IN. WIDE PAPER, Y OR N' TO PAPERM
STORE !(PAPERM) TO PAPERM
IF PAPERM = 'N' .AND. NUMBOR = 3
 REMARK  CAN ONLY PLOT TWO BORINGS ON 8-1/2 IN. PAPER.
 STORE 2 TO NUMBOR
ENDIF
remark   Enter the boring number(s) when asked (must be as stored,
remark     including blanks, e.g. DH 1640; can be in UPPER or lower
remark     case characters.
STORE 'BORMAIN INDEX BORMAINI' TO BFILE
store 'N' to action
REMARK    FOR FIRST BORING (hit any key to continue).
wait
DO BORFIND
IF ACTION = 'Q'
 RESTORE FROM MEMVAR
 RETURN
ENDIF
STORE BORNUM TO BORNUM1
STORE BORSIDM TO BORSID1
STORE BORSIDC TO BORSIDC1
STORE TOPELM TO TOPEL1
IF NUMBOR >= 2
REMARK    FOR SECOND BORING (hit any key to continue).
wait
DO BORFIND
IF ACTION = 'Q'
 RESTORE FROM MEMVAR
 RETURN
ENDIF
STORE BORNUM TO BORNUM2
STORE BORSIDM TO BORSID2
STORE BORSIDC TO BORSIDC2
STORE TOPELM TO TOPEL2
ENDIF
IF NUMBOR = 3
REMARK    FOR THIRD BORING (hit any key to continue).
wait
DO BORFIND
IF ACTION = 'Q'
 RESTORE FROM MEMVAR
 RETURN
ENDIF
STORE BORNUM TO BORNUM3
STORE BORSIDM TO BORSID3
STORE BORSIDC TO BORSIDC3
```

```
STORE TOPELM TO TOPEL3
ENDIF
RELEASE BORNUM
RELEASE BORSIDM
RELEASE BORSIDC
RELEASE TOPELM
REMARK        CHECKING COMPLETE
USE BORSID INDEX BORSIDN
FIND '&BORSIDC1'
STORE PROJ:NAME TO PROJ
STORE SITE:NAME TO SITE
STORE LOC:NS TO NSCORD1
STORE LOC:EW TO EWCORD1
STORE DATE TO DATE1
STORE TOP:HOLE TO TOPEL1
STORE DEPTH TO DEPTH1
STORE TOPEL1-DEPTH1 TO BOTEL1
*
IF NUMBOR >= 2
FIND '&BORSIDC2'
STORE LOC:NS TO NSCORD2
STORE LOC:EW TO EWCORD2
STORE DATE TO DATE2
STORE TOP:HOLE TO TOPEL2
STORE DEPTH TO DEPTH2
STORE TOPEL2-DEPTH2 TO BOTEL2
ENDIF
*
IF NUMBOR = 3
FIND '&BORSIDC3'
STORE LOC:NS TO NSCORD3
STORE LOC:EW TO EWCORD3
STORE DATE TO DATE3
STORE TOP:HOLE TO TOPEL3
STORE DEPTH TO DEPTH3
STORE TOPEL3-DEPTH3 TO BOTEL3
ENDIF
ERASE
SET FORMAT TO SCREEN
@ 3,5 SAY 'BORING NUMBERS AND DEPTHS ARE:'
@ 4,10 SAY 'BORING NO.'
@ 4,30 SAY 'DEPTH, FT.'
@ 5,10 SAY BORNUM1
@ 5,30 SAY DEPTH1
 IF NUMBOR >= 2
  @ 6,10 SAY BORNUM2
  @ 6,30 SAY DEPTH2
 ENDIF
  IF NUMBOR = 3
   @ 7,10 SAY BORNUM3
   @ 7,30 SAY DEPTH3
  ENDIF
 @ 8,0 SAY ' '
?
remark  Options for vertical scale are: 5 ft/in (max boring depths <  40 ft),
```

```
remark                                    10 ft/in (max boring depths <  80 ft),
remark                                    20 ft/in (max boring depths < 160 ft),
remark                                    30 ft/in (max boring depths < 240 ft).
?
input      ' ENTER CHOICE: 5, 10, 20, OR 30' TO SCALE
*
?
remark      Printer plot  will take a few minutes, so take 5.
USE
STORE 0 TO NSDIF
IF NUMBOR >= 2
 STORE NSCORD1-NSCORD2 TO NSDIF
  IF NSDIF < 0
   STORE NSDIF*-1 TO NSDIF
  ENDIF
 STORE EWCORD1-EWCORD2 TO EWDIF
  IF EWDIF < 0
   STORE EWDIF*-1 TO EWDIF
  ENDIF
  IF EWDIF <> 0 .OR. NSDIF <> 0
   DO SQROOT
   STORE INT(DIST/10 + 0.5)*10 TO DIST12
  ELSE
   STORE 0 TO DIST12
  ENDIF
ENDIF
 IF NUMBOR = 3
  STORE NSCORD2-NSCORD3 TO NSDIF
   IF NSDIF < 0
    STORE NSDIF*-1 TO NSDIF
   ENDIF
  STORE EWCORD2-EWCORD3 TO EWDIF
  IF EWDIF< 0
   STORE EWDIF*-1 TO EWDIF
  ENDIF
   IF EWDIF <> 0 .OR. NSDIF <> 0
    DO SQROOT
    STORE INT(DIST/10 + 0.5)*10 TO DIST23
   ELSE
    STORE 0 TO DIST23
   ENDIF
 ENDIF
RELEASE NSDIF
RELEASE EWDIF
RELEASE DIST
 IF NUMBOR <= 2
  STORE 20 TO COL1
  STORE 70 TO COL2
 ENDIF
IF NUMBOR = 3
 STORE 20 TO COL1
 STORE 70 TO COL2
 STORE 120 TO COL3
ENDIF
STORE TOPEL1 TO HIEL
```

```
 IF NUMBOR >= 2
  IF HIEL<TOPEL2
   STORE TOPEL2 TO HIEL
  ENDIF
 ENDIF
  IF NUMBOR = 3
   IF HIEL<TOPEL3
    STORE TOPEL3 TO HIEL
   ENDIF
  ENDIF
  STORE INT(HIEL/5+0.5)*5 TO HIEL
  STORE BOTEL1 TO LBOTEL
IF NUMBOR >= 2
 IF LBOTEL > BOTEL2
    STORE BOTEL2 TO LBOTEL
 ENDIF
ENDIF
  IF NUMBOR = 3
   IF LBOTEL > BOTEL3
     STORE BOTEL3 TO LBOTEL
   ENDIF
  ENDIF
SET FORMAT TO PRINT
SET MARGIN TO 0
* SET PRINT TO COMPRESSED
   SET PRINT ON
   ?? CHR(27)+"@"
   ?? CHR(15)
   SET PRINT OFF
@ 1,20 SAY 'LOG OF STRATA NAMES AND DESCRIPTIONS.  VERTICAL SCALE = '
@ 1,76 SAY SCALE USING '99'
@ 1,79 SAY 'FT/IN'
@ 3,COL1-9 SAY BORNUM1 USING 'XXXXXXXXXXX'
@ 3,COL1+3 SAY 'SID='
@ 3,COL1+8 SAY BORSID1 USING '99999'
 IF NUMBOR >= 2
  @ 3,COL2-9 SAY BORNUM2 USING 'XXXXXXXXXX'
  @ 3,COL2+3 SAY 'SID='
  @ 3,COL2+8 SAY BORSID2 USING '99999'
 ENDIF
 IF NUMBOR = 3
  @ 3,COL3-9 SAY BORNUM3 USING 'XXXXXXXXXX'
  @ 3,COL3+3 SAY 'SID='
  @ 3,COL3+8 SAY BORSID3 USING '99999'
 ENDIF
@ 4,COL1-9 SAY 'E-W CORD= '
@ 4,COL1+1 SAY EWCORD1
 IF NUMBOR >= 2
@ 4,COL2-9 SAY 'E-W CORD= '
@ 4,COL2+1 SAY EWCORD2
 ENDIF
 IF NUMBOR = 3
@ 4,COL3-9 SAY 'E-W CORD= '
@ 4,COL3+1 SAY EWCORD3
 ENDIF
```

```
@ 5,COL1-9 SAY 'N-S CORD= '
@ 5,COL1+1 SAY NSCORD1
 IF NUMBOR >= 2
@ 5,COL2-9 SAY 'N-S CORD= '
@ 5,COL2+1 SAY NSCORD2
 ENDIF
 IF NUMBOR = 3
@ 5,COL3-9 SAY 'N-S CORD= '
@ 5,COL3+1 SAY NSCORD3
 ENDIF
@ 6,COL1-3 SAY DATE1 USING 'XXXXXXXXXX'
 IF NUMBOR >= 2
  @ 6, COL2-3 SAY DATE2 USING 'XXXXXXXXXX'
 ENDIF
 IF NUMBOR = 3
  @ 6, COL3-3 SAY DATE3 USING 'XXXXXXXXXX'
 ENDIF
@ 7,COL1-8 SAY 'TOP EL= '
@ 7,COL1 SAY TOPEL1 USING '99999.99'
@ 7,COL1+9 SAY 'FT'
 IF NUMBOR >= 2
@ 7,COL2-8 SAY 'TOP EL= '
@ 7,COL2 SAY TOPEL2 USING '99999.99'
@ 7,COL2+9 SAY 'FT'
 ENDIF
 IF NUMBOR = 3
@ 7,COL3-8 SAY 'TOP EL= '
@ 7,COL3 SAY TOPEL3 USING '99999.99'
@ 7,COL3+9 SAY 'FT'
 ENDIF
@ 8,COL1-7 SAY 'DEPTH= '
@ 8,COL1 SAY DEPTH1 USING '9999.99'
@ 8,COL1+8 SAY 'FT'
 IF NUMBOR >= 2
@ 8,COL2-7 SAY 'DEPTH= '
@ 8,COL2 SAY DEPTH2 USING '9999.99'
@ 8,COL2+8 SAY 'FT'
 ENDIF
 IF NUMBOR = 3
@ 8,COL3-7 SAY 'DEPTH= '
@ 8,COL3 SAY DEPTH3 USING '9999.99'
@ 8,COL3+8 SAY 'FT'
 ENDIF
 IF NUMBOR >=2
@ 9,COL1+15 SAY 'DISTANCE = '
@ 9,COL1+26 SAY DIST12 USING '9999'
@ 9,COL1+31 SAY 'FEET'
 ENDIF
 IF NUMBOR = 3
@ 9,COL2+15 SAY 'DISTANCE = '
@ 9,COL2+26 SAY DIST23 USING '9999'
@ 9,COL2+31 SAY 'FEET'
 ENDIF
USE BORFEA INDEX BORFEAI
FIND &BORNUM1
```

```
 DO WHILE BORID = BORNUM1 .AND. .NOT. EOF
  IF SID = BORSID1
   STORE # TO RECB1
   STORE BORNUM1 TO BOR1
   STORE 'NONE' TO BORNUM1
   LOOP
  ELSE
   SKIP
   LOOP
  ENDIF
 ENDDO
 STORE BOR1 TO BORNUM1
IF NUMBOR >= 2
  FIND &BORNUM2
   DO WHILE BORID = BORNUM2 .AND. .NOT. EOF
    IF SID = BORSID2
     STORE # TO RECB2
     STORE BORNUM2 TO BOR2
     STORE 'NONE' TO BORNUM2
     LOOP
    ELSE
     SKIP
     LOOP
    ENDIF
   ENDDO
 STORE BOR2 TO BORNUM2
ENDIF
 IF NUMBOR = 3
  FIND &BORNUM3
   DO WHILE BORID = BORNUM3 .AND. .NOT. EOF
    IF SID = BORSID3
     STORE # TO RECB3
     STORE BORNUM3 TO BOR3
     STORE 'NONE' TO BORNUM3
     LOOP
    ELSE
     SKIP
     LOOP
    ENDIF
   ENDDO
  STORE BOR3 TO BORNUM3
ENDIF
GO BOTTOM
STORE # TO RECEND
GO TOP
STORE HIEL TO LINEL
* SET LINE SPACING TO DESIRED VERTICAL SCALE
IF SCALE = 5 .OR. SCALE = 10 .OR. SCALE = 20
 STORE 'CHR(27)+"0"' TO LINSP
 SET PRINT ON
 ?? CHR(27) + "0"
 SET PRINT OFF
ENDIF
 IF SCALE = 30
  STORE 'CHR(27)+CHR(65)+CHR(6)' TO LINSP
```

```
  SET PRINT ON
  ?? CHR(27)+CHR(65)+CHR(6)
  SET PRINT OFF
ENDIF
SET PRINT ON
?? CHR(27)+CHR(85)+CHR(1)
SET PRINT OFF
STORE 1 TO INDX1
STORE 1 TO INDX2
STORE 1 TO INDX3
STORE INT(LBOTEL/10-0.5)*10 TO LOWBOT
* STORE LINE INCREMENT FOR CHECKING TO PRINT DATA VALUES AT LINE ELEV
IF SCALE = 20 .OR. SCALE = 30
  STORE 1.245 TO LININCR
ENDIF
  IF SCALE = 5
   STORE 0.312 TO LININCR
  ENDIF
   IF SCALE = 10
    STORE 0.624 TO LININCR
   ENDIF
 STORE 10 TO LINE
 STORE -100 TO LASTEL1
 STORE -100 TO LASTEL2
 STORE -100 TO LASTEL3
*  MAIN DO LOOP                          **** MAIN DO LOOP  ******
DO WHILE LINEL >= LOWBOT
DO CASE
 CASE LINE=12
  @ LINE,0 SAY 'E'
 CASE LINE = 14
  @ LINE,0 SAY 'L'
 CASE LINE = 16
  @ LINE,0 SAY 'E'
 CASE LINE = 18
  @ LINE,0 SAY 'V'
 CASE LINE = 20
  @ LINE,0 SAY 'A'
 CASE LINE = 22
  @ LINE,0 SAY 'T'
 CASE LINE = 24
  @ LINE,0 SAY 'I'
 CASE LINE = 26
  @ LINE,0 SAY 'O'
 CASE LINE = 28
  @ LINE,0 SAY 'N'
 CASE LINE = 32
  @ LINE,0 SAY 'F'
 CASE LINE = 34
  @ LINE,0 SAY 'E'
 CASE LINE = 36
  @ LINE,0 SAY 'E'
 CASE LINE = 38
  @ LINE,0 SAY 'T'
ENDCASE
```

```
IF LINEL = INT(LINEL/10)*10
  @ LINE,2 SAY LINEL USING '9999'
  @ LINE,7 SAY '-'
 ELSE
  @ LINE,7 SAY '¦'
ENDIF
*  Plot the first boring ****
  IF RECB1 < RECEND
   GO RECB1
  ENDIF
IF SID = BORSID1 .AND. LINEL <=(TOPEL1+0.1)
  @ LINE,COL1-1 SAY '¦'
 IF FEAT:ELEV >= INT((LINEL-LININCR)*10-.5)/10
  IF FEA:DEPTH =DEPTH1 .OR. FEA:DEPTH = DEPTH1-0.01
   @ LINE,COL1 SAY ' '
  ELSE
   @ LINE,COL1 SAY '-'
  ENDIF
  @ LINE,COL1+1 SAY '¦'
  @ LINE,COL1+3 SAY FEAT:NAME
  @ LINE,COL1+14 SAY FEAT:DESC
  STORE FEA:DEPTH TO DEPTH1
  STORE LINEL TO LASTEL1
  SKIP
  STORE # TO RECB1
 ELSE
     @ LINE,COL1+1 SAY '¦'
 ENDIF
ENDIF
 IF SID <> BORSID1 .AND. LINEL < LASTEL1 .AND. LINEL > BOTEL1
  @ LINE,COL1-1 SAY '¦'
  @ LINE,COL1 SAY ' '
  @ LINE,COL1+1 SAY '¦'
  STORE LINEL TO LASTEL1
 ENDIF
IF SID <> BORSID1 .AND. LINEL < LASTEL1 .AND. LINEL < BOTEL1
 DO WHILE INDX1=1
 @ LINE,COL1+3 SAY 'EL='
 @ LINE,COL1+7 SAY BOTEL1 USING '99999.99'
 STORE INDX1+1 TO INDX1
 ENDDO
ENDIF
 IF NUMBOR >= 2
  DO BOR2LOG
 ENDIF
  IF NUMBOR = 3
   DO BOR3LOG
  ENDIF
 IF NUMBOR <= 2
  IF LINEL = INT(LINEL/10)*10
   @ LINE,125 SAY '-'
   @ LINE,127 SAY LINEL USING '9999'
  ELSE
    @ LINE,125 SAY '¦'
  ENDIF
```

```
 ENDIF
 IF NUMBOR = 3
  IF LINEL = INT(LINEL/10)*10
   @ LINE,165 SAY '-'
   @ LINE,167 SAY LINEL USING '9999'
  ELSE
   @ LINE,165 SAY '.'
  ENDIF
 ENDIF
STORE LINE+1 TO LINE
 IF LINE = 120
  @ 120,0 SAY
  SET PRINT ON
   ?? CHR(27)+"@"
   ?? CHR(27)+"3"
   ?? &linsp
   ?? chr(15)
   ?? chr(27)+chr(85)+chr(1)
  set print off
  store 0 to line
 ENDIF
* SET LINE ELEV INC. FOR DESIRED SCALES
  DO CASE
   CASE SCALE = 20 .OR. SCALE = 30
    STORE LINEL-2.5 TO LINEL
   CASE SCALE = 5
    STORE LINEL-0.625 TO LINEL
   CASE SCALE = 10
    STORE LINEL-1.25 TO LINEL
  ENDCASE
ENDDO
*  END OF MAIN DO LOOP       **** END MAIN DO LOOP ***
SET PRINT ON
?? CHR(27)+"@"
?? CHR(15)
SET PRINT OFF
USE
@ LINE+1,81 SAY '*****************************************************'
@ LINE+2,81 SAY '*'
@ LINE+2,83 SAY 'PROJ:'
@ LINE+2,90 SAY PROJ
@ LINE+2,131 SAY '*'
@ LINE+3,81 SAY '*'
@ LINE+3,83 SAY 'SITE:'
@ LINE+3,90 SAY SITE
@ LINE+3,131 SAY '*'
@ LINE+4,81 SAY '*'
@ LINE+4,82 SAY 'LOG OF BORINGS'
@ LINE+4,97 SAY BORNUM1 USING 'XXXXXXXXXX'
 IF NUMBOR >=2
@ LINE+4,108 SAY BORNUM2 USING 'XXXXXXXXXX'
 ENDIF
IF NUMBOR = 3
@ LINE+4,120 SAY BORNUM3 USING 'XXXXXXXXXX'
ENDIF
```

```
@ LINE+4,131 SAY '*'
@ LINE+5,81 SAY '**************************************************'
@ LINE+6,0 SAY ' '
RELEASE ALL
RESTORE FROM MEMVAR
SET FORMAT TO SCREEN
SET PRINT ON
?? CHR(27)+"@"
SET PRINT OFF
RETURN
```

```
* calculating square root for plotting boring logs.  SQROOT.PRG
STORE NSDIF/EWDIF TO TANA
STORE TANA*TANA*TANA TO TANA3
IF TANA*TANA < 1
   STORE TANA3*TANA*TANA TO TANA5
   STORE (TANA - (TANA3/3) + (TANA5/5)) TO ATANA
    ELSE
     STORE (1.5708-(1/TANA)+(1/(3*TANA3))) TO ATANA
ENDIF
STORE ATANA*ATANA*ATANA TO ATANA3
STORE ATANA3*ATANA*ATANA TO ATANA5
STORE (ATANA-(ATANA3/6)+(ATANA5/120)) TO SINA
STORE INT(NSDIF/SINA) TO DIST
RELEASE TANA
RELEASE TANA3
RELEASE TANA5
RELEASE ATANA
RELEASE ATANA3
RELEASE ATANA5
RELEASE SINA
RETURN
```

```
* command file to plot second boring.     BOR2LOG.PRG
IF RECB2 < RECEND
GO RECB2
ENDIF
IF SID = BORSID2 .AND. LINEL <= (TOPEL2+0.1)
  @ LINE,COL2-1 SAY '|'
 IF FEAT:ELEV >= INT((LINEL-LININCR)*10-.5)/10
  IF FEA:DEPTH = DEPTH2 .OR. FEA:DEPTH = DEPTH2-0.01
   @ LINE,COL2 SAY ' '
  ELSE
   @ LINE,COL2 SAY '-'
  ENDIF
  @ LINE,COL2+1 SAY '|'
  @ LINE,COL2+3 SAY FEAT:NAME
  @ LINE,COL2+14 SAY FEAT:DESC
  STORE FEA:DEPTH TO DEPTH2
  STORE LINEL TO LASTEL2
  SKIP
  STORE # TO RECB2
 ELSE
    @ LINE,COL2+1 SAY '|'
 ENDIF
ENDIF
 IF SID <> BORSID2 .AND. LINEL < LASTEL2 .AND. LINEL > BOTEL2
  @ LINE,COL2-1 SAY '|'
  @ LINE,COL2 SAY   '
  @ LINE,COL2+1 SAY '|'
  STORE LINEL TO LASTEL2
 ENDIF
IF SID <> BORSID2 .AND. LINEL < LASTEL2 .AND. LINEL < BOTEL2
  DO WHILE INDX2 = 1
  @ LINE, COL2+3 SAY 'EL='
  @ LINE, COL2+7 SAY BOTEL2 USING '99999.99'
  STORE INDX2+1 TO INDX2
  ENDDO
 ENDIF
RETURN
```

```
* command file to plot third boring log.      BOR3LOG.PRG
IF RECB3 < RECEND
GO RECB3
ENDIF
IF SID = BORSID3 .AND. LINEL <= (TOPEL3+0.1)
  @ LINE,COL3-1 SAY '|'
 IF FEAT:ELEV >= INT((LINEL-LININCR)*10-.5)/10
  IF FEA:DEPTH = DEPTH3 .OR. FEA:DEPTH = DEPTH3-0.01
   @ LINE,COL3 SAY ' '
  ELSE
   @ LINE,COL3   SAY '-'
  ENDIF
   @ LINE,COL3+1 SAY '|'
   @ LINE,COL3+3 SAY FEAT:NAME
   @ LINE,COL3+14 SAY FEAT:DESC
   STORE FEA:DEPTH TO DEPTH3
   STORE LINEL TO LASTEL3
   SKIP
   STORE # TO RECB3
 ELSE
     @ LINE,COL3+1 SAY '|'
 ENDIF
ENDIF
 IF SID <> BORSID3 .AND. LINEL < LASTEL3 .AND. LINEL > BOTEL3
  @ LINE,COL3-1 SAY '|'
  @ LINE,COL3 SAY ' '
  @ LINE,COL3+1 SAY '|'
  STORE LINEL TO LASTEL3
 ENDIF
IF SID <> BORSID3 .AND. LINEL < LASTEL3 .AND. LINEL < BOTEL3
  DO WHILE INDX3 = 1
  @ LINE,COL3+3 SAY 'EL='
  @ LINE,COL3+7 SAY BOTEL3 USING '99999.99'
  STORE INDX3+1 TO INDX3
  ENDDO
ENDIF
RETURN
```

```
* MENU FOR SELECTION OF SUMMARY REPORTS TO PRINT  BORPRINT.PRG
set format to print
eject
set format to screen
store '6' to continue
do while continue <> '9'
erase
?
?
remark           MENU FOR SELECTION OF SUMMARY REPORTS          Selection
remark     ================================================    ---------
remark     LIST OF PROJECTS AND SITES - - - - - - - - - - - - - - - 1
?
remark     LIST OF BORINGS, COORD., DATE, TOP ELEV., AND DEPTH
REMARK           FOR A PROJECT OR A SITE  - - - - - - - - - - - - - 2
?
remark     TABULAR LOG FOR GIVEN BORING (CLASS & DESCRIP) - - - - - 3
?
remark     TABULAR LOG OF DRILLING TYPE FOR A GIVEN BORING  - - - - 4
?
remark     TABULAR LOG OF BLOW COUNTS FOR A GIVEN BORING  - - - - - 5
?
remark     LIST OF TEST TYPES FOR GIVEN PROJECT OR SITE - - - - - - 6
?
remark     TEST RESULTS FOR GIVEN PROJECT OR SITE BY BORING NO. - - 7
?
remark     TABULAR LOG OF TEST RESULTS FOR A GIVEN BORING - - - - - 8
?
remark     RETURN TO PREVIOUS MENU  - - - - - - - - - - - - - - - - 9
?
?
ACCEPT                  Enter Selection        to continue
*
*  set or reset EPSON printer for 12 chr/inch, and new page.
SET PRINT ON
?? CHR(27)+"@"
?? CHR(27)+"M"
SET PRINT OFF
SET MARGIN TO 8
*
if continue = '1'
  DO BORPROJ
  SAVE TO MEMVAR
  CLEAR
  RESTORE FROM MEMVAR
  loop
endif
*
if continue = '2'
  DO BORLIST
  loop
endif
*
if continue = '3'
  DO BORLOGPT
```

```
  loop
endif
*
IF CONTINUE = '4'
  DO BORDRILL
  LOOP
ENDIF
*
IF CONTINUE = '5'
  DO BORBLOW
  LOOP
ENDIF
*
if continue = '6'
  USE BORTST
  INDEX ON STR(SID,5,0) TO BORTSTN
  DO BORTESTS
  SAVE TO MEMVAR
  CLEAR
  RESTORE FROM MEMVAR
  loop
endif
*
if continue = '7'
  DO BORRESUL
  loop
endif
*
if continue = '8'
  SET MARGIN TO 10
  DO BORLOGT
  loop
endif
*
if continue <> '9'
  remark                          Invalid selection
  accept ' Enter 9 to exit to main menu, or "Return" to try again' to continue
endif
*
if continue = '9'
  store 'M' to running
  loop
endif
*
enddo
return
```

```
* to print a list of projects and sites   BORPROJ.PRG
SET FORMAT TO PRINT
USE BORSID INDEX BORSIDP
STORE PROJ:NAME TO PROJM
STORE SITE:NAME TO SITEM
@ 5,5 SAY 'LIST OF PROJECTS AND SITES IN THE BORING DATA BASE'
STORE 7 TO LNO
@ LNO,5 SAY 'PROJECT:'
@ LNO,14 SAY PROJ:NAME
@ LNO+1,5 SAY 'SITE:'
@ LNO+1,14 SAY SITE:NAME
SKIP
STORE LNO+3 TO LNO
DO WHILE .NOT. EOF
  IF PROJ:NAME <> PROJM .OR. SITE:NAME <> SITEM
    @ LNO,5 SAY 'PROJECT:'
    @ LNO,14 SAY PROJ:NAME
    @ LNO+1,5 SAY 'SITE:'
    @ LNO+1,14 SAY SITE:NAME
    STORE LNO+3 TO LNO
  ENDIF
  STORE PROJ:NAME TO PROJM
  STORE SITE:NAME TO SITEM
  SKIP
   IF LNO > 60
    EJECT
    @ 5,5 SAY 'LIST OF PROJECT AND SITES (CONTINUED)'
    STORE 7 TO LNO
   ENDIF
ENDDO
@ LNO+1,3 SAY '
EJECT
SET FORMAT TO SCREEN
RETURN
```

```
* PRINT A LIST OF BORINGS,COORD,ELEV,DATE,DEPTH FOR GIVEN PROJECT
* BORLIST.PRG
STORE 'T' TO TRY
*  MAIN DO LOOP
DO WHILE TRY <> 'Z'
ACCEPT  'ENTER P TO LIST FOR A PROJECT NAME, OR S TO LIST FOR A SITE' TO WANT
STORE !(WANT) TO WANT
 IF WANT = 'P'
  ACCEPT  'ENTER PROJECT NAME' TO PROJM
  STORE 'NONE' TO SITEM
 ELSE
  STORE 'S' TO WANT
  ACCEPT  'ENTER SITE NAME' TO SITEM
  STORE 'NONE' TO PROJM
 ENDIF
USE BORMAIN INDEX BORMAINI
SET FORMAT TO PRINT
 IF WANT = 'P'
  STORE !(PROJM) TO PROJM
  @ 5,5 SAY 'BORING SUMMARY FOR PROJECT:
  @ 5,33 SAY PROJM
 ELSE
  STORE !(SITEM) TO SITEM
  @ 5,5 SAY 'BORING SUMMARY FOR SITE:'
  @ 5,33 SAY SITEM
 ENDIF
  @ 7,1 SAY '--BORING NO.---'
  @ 7,17 SAY '-SIL-'
  @ 7,23 SAY '--NS COORD--'
  @ 7,36 SAY '--EW COORD--'
  @ 7,49 SAY '---DATE---'
  @ 7,61 SAY 'TOP ELEV'
  @ 7,70 SAY 'DEPTH, FT'
  STORE 8 TO LNO
  STORE 0 TO RECPT
   DO WHILE .NOT. EOF
    IF !(PROJ:NAME) = PROJM .or. !(site:name) = sitem
      @ LNO,1 SAY BORID
      @ LNO,17 SAY SID
      @ LNO,23 SAY LOC:NS
      @ LNO,36 SAY LOC:EW
      @ LNO,49 SAY DATE
      @ LNO,59 SAY TOP:HOLE
      @ LNO,69 SAY DEPTH
      STORE RECPT+1 TO RECPT
      STORE LNO+1 TO LNO
    ENDIF
    SKIP
   ENDDO
  IF RECPT = 0
   IF WANT = 'P'
    REMARK  DID NOT FIND YOUR PROJECT, DO YOU WANT A LIST TO REENTER NAME FROM?
   ELSE
    REMARK  DID NOT FIND YOUR SITE, DO YOU WANT A LIST TO REENTER NAME FROM?
   ENDIF
```

```
     ACCEPT 'ENTER Y FOR YES AND N FOR NO' TO ANS
     STORE !(ANS) TO ANS
    IF ANS = 'Y'
      DO BORPROJ
      LOOP
    ELSE
      STORE 'Z' TO TRY
      LOOP
    ENDIF
   ENDIF
  ENDIF
  STORE 'Z' TO TRY
ENDDO
* END OF MAIN DO LOOP
 STORE LNO+1 TO LNO
 @ LNO,3 SAY '  '
EJECT
SET FORMAT TO SCREEN
RETURN
```

```
* PRINT A TABULAR LOG OF GIVEN BORING    BORLOGPT.PRG
STORE 'BORFEA INDEX BORFEAI' TO BFILE
store 'A' to repeat
DO WHILE repeat <> 'S'
DO BORFIND
FIND &BORNUM
 IF # = 0
  accept 'NO DATA FOR THIS BORING, DO YOU WANT TO ENTER ANOTHER? Y OR N' TO ANS
   store !(ans) to ans
    IF ans = 'Y'
     LOOP
    ELSE
     USE
     SET FORMAT TO SCREEN
     RETURN
    ENDIF
 ENDIF
 STORE 'S' TO REPEAT
ENDDO
SET FORMAT TO PRINT
@ 5,5 SAY 'TABULAR LOG OF BORING:'
@ 5,28 SAY BORID
@ 5,47 SAY 'SID:'
@ 5,52 SAY BORSIDM USING '99999'
@ 5,60 SAY 'TOP ELEV:'
@ 5,70 SAY TOPELM
@ 6,5 SAY 'PROJECT:'
@ 6,14 SAY PROJM
@ 7,5 SAY 'SITE:'
@ 7,12 SAY SITEM
  @ 9,2 SAY 'ELEVATION'
  @ 9,13 SAY 'DEPTH, FT'
  @ 9,24 SAY 'STRATA TYPE'
  @ 9,37 SAY '  DATE'
  @ 9,49 SAY '           DESCRIPTION'
STORE 11 TO LNO
STORE 0 TO PRNT
DO WHILE BORID = BORNUM .AND. .NOT. EOF
 IF SID = BORSIDM
  @ LNO,1 SAY FEAT:ELEV
  @ LNO,13 SAY FEA:DEPTH
  @ LNO,24 SAY FEAT:NAME
  @ LNO,37 SAY FEAT:DATE
  @ LNO,49 SAY FEAT:DESC
  SKIP
  STORE LNO+1 TO LNO
  STORE 1 TO PRNT
 ELSE
  skip
 ENDIF
ENDDO
  IF PRNT = 0
    @ LNO,5 SAY 'NO DATA FOR THIS BORING'
  ENDIF
@ LNO+1,3 SAY '  '
EJECT
SET FORMAT TO SCREEN
RETURN
```

```
* PRINT LOG OF DRILL SEGMENTS FOR A GIVEN BORING    BORDRILL.PRG
STORE 'BORSEG INDEX BORSEGI' TO BFILE
store 'A' to repeat
DO WHILE repeat <> 'S'
DO BORFIND
FIND &BORNUM
 IF # = 0
  accept 'NO DATA FOR THIS BORING, DO YOU WANT TO ENTER ANOTHER? Y OR N' TO ANS
   store !(ans) to ans
    IF ans = 'Y'
     LOOP
    ELSE
     USE
     SET FORMAT TO SCREEN
     RETURN
    ENDIF
 ENDIF
 STORE 'S' TO REPEAT
ENDDO
SET FORMAT TO PRINT
@ 4,15 SAY 'TABULAR LOG OF DRILLING SEGMENTS'
@ 5,5 SAY 'BORING NO.:'
@ 5,17 SAY BORID
@ 5,40 SAY 'SID:'
@ 5,45 SAY BORSIDM USING '99999'
@ 5,55 SAY 'TOP ELEV:'
@ 5,65 SAY TOPELM
@ 6,5 SAY 'PROJECT:'
@ 6,14 SAY PROJM
@ 7,5 SAY 'SITE:'
@ 7,11 SAY SITEM
  @ 9,5 SAY 'ELEVATION'
  @ 9,17 SAY 'DEPTH, FT'
  @ 9,27 SAY 'BORE SIZE'
  @ 9,38 SAY 'BORE TOOL'
STORE 11 TO LNO
STORE 0 TO PRNT
 DO WHILE BORID = BORNUM .and. .not. eof
  IF SID = BORSIDM
    @ LNO,5 SAY BOR:ELEV
    @ LNO,17 SAY BOR:DEPTH
    @ LNO,27 SAY BOR:SIZE
    @ LNO,38 SAY BOR:TOOL
    SKIP
    STORE 1 TO PRNT
  ELSE
   SKIP
  ENDIF
  STORE LNO+1 TO LNO
 ENDDO
  IF PRNT = 0
    @ LNO,5 SAY 'NO DATA FOR THIS BORING'
  ENDIF
@ LNO+1,3 SAY '  '
EJECT
SET FORMAT TO SCREEN
RETURN
```

```
* PRINT LOG OF BLOW COUNTS FOR A GIVEN BORING     BORBLOW.PRG
STORE 'BORSPT INDEX BORSPTI' TO BFILE
store 'A' to repeat
DO WHILE repeat <> 'S'
DO BORFIND
FIND &BORNUM
 IF # = 0
  accept 'NO DATA FOR THIS BORING, DO YOU WANT TO ENTER ANOTHER? Y OR N' TO ANS
   store !(ans) to ans
    IF ans = 'Y'
     LOOP
    ELSE
     USE
     SET FORMAT TO SCREEN
     RETURN
    ENDIF
 ENDIF
 STORE 'S' TO REPEAT
ENDDO
SET FORMAT TO PRINT
@ 4,15 SAY 'TABULAR LOG OF BLOW COUNTS'
@ 5,5 SAY 'BORING NO.:'
@ 5,17 SAY BORID
@ 5,40 SAY 'SID:'
@ 5,45 SAY BORSIDM USING '99999'
@ 5,55 SAY 'TOP ELEV:'
@ 5,65 SAY TOPELM
@ 6,5 SAY 'PROJECT:'
@ 6,14 SAY PROJM
@ 7,5 SAY 'SITE:'
@ 7,11 SAY SITEM
  @ 9,5 SAY 'ELEVATION'
  @ 9,17 SAY 'DEPTH, FT'
  @ 9,27 SAY 'BLOWS/FT'
  @ 9,38 SAY 'R E M A R K S'
STORE 11 TO LNO
STORE 0 TO PRNT
 DO WHILE BORID = BORNUM .and. .not. eof
  IF SID = BORSIDM
    @ LNO,5 SAY BLOW:ELEV
    @ LNO,17 SAY BLO:DEPTH
    @ LNO,27 SAY BLOW:CTS
    @ LNO,38 SAY BLOW:RMKS
    STORE LNO+1 TO LNO
    SKIP
    STORE 1 TO PRNT
  ELSE
   SKIP
  ENDIF
 ENDDO
  IF PRNT = 0
   @ LNO,5 SAY 'NO DATA FOR THIS BORING'
  ENDIF
@ LNO+1,3 SAY '
EJECT
SET FORMAT TO SCREEN
RETURN
```

```
* PRINT A LIST OF TEST TYPES FOR A GIVEN PROJECT OR SITE  BORTESTS.PRG
STORE 1 TO PAGENO
STORE 'T' TO TRY
*  MAIN DO LOOP
DO WHILE TRY <> 'Z'
ACCEPT  'ENTER P TO LIST FOR A PROJECT NAME, OR S TO LIST FOR A SITE' TO WANT
STORE !(WANT) TO WANT
 IF WANT = 'P'
  ACCEPT  'ENTER PROJECT NAME' TO PROJM
  STORE !(PROJM) TO PROJM
 ELSE
  STORE 'S' TO WANT
  ACCEPT  'ENTER SITE NAME' TO SITEM
  STORE !(SITEM) TO SITEM
 ENDIF
SELE PRIMARY
USE BORSID INDEX BORSIDN
SELE SECO
USE BORTST INDEX BORTSTN
SET FORMAT TO PRINT
 IF WANT = 'P'
  @ 5,5 SAY 'SUMMARY OF TEST TYPES FOR PROJECT: '
  @ 5,40 SAY PROJM
 ELSE
  @ 5,5 SAY 'SUMMARY OF TEST TYPES FOR SITE: '
  @ 5,37 SAY SITEM
 ENDIF
  @ 7,25 SAY 'TYPE TEST'
  @ 7,38 SAY 'NO. TESTS'
  @ 7,49 SAY 'LOC. RESULTS'
  STORE 9 TO LNO
  STORE 0 TO RECPT
SELE PRIM
IF WANT = 'P'
   LOCATE FOR !(PROJ:NAME) = PROJM
ENDIF
 IF WANT = 'S'
   LOCATE FOR !(SITE:NAME) = SITEM
 ENDIF
DO WHILE .NOT. EOF
 STORE SID TO BORSIDM
 STORE STR(SID,5,0) TO BORSIDC
  IF LNO >= 60
   @ LNO+2,45 SAY PAGENO
      STORE PAGENO + 1 TO PAGENO
       IF WANT = 'P'
        @ 5,5 SAY 'SUMMARY TESTS FOR PROJECT:'
        @ 5,40 SAY PROJM
        @ 5,80 SAY '(CONT.)'
       ELSE
        @ 5,5 SAY 'SUMMARY OF TESTS FOR SITE:'
        @ 5,37 SAY SITEM
        @ 5,77 SAY '(CONT.)'
       ENDIF
      @ 7,25 SAY 'TYPE TEST'
```

```
      @ 7,38 SAY 'NO. TESTS'
      @ 7,49 SAY 'LOC. RESULTS'
     STORE 9 TO LNO
  ENDIF
 @ LNO,0 SAY 'BORING NO.:'
 @ LNO,12 SAY BORID
 @ LNO,23 SAY 'SID:'
 @ LNO,28 SAY SID
IF WANT = 'S'
 @ LNO,35 SAY 'PROJ:'
 @ LNO,41 SAY PROJ:NAME
ELSE
 @ LNO,35 SAY 'SITE:'
 @ LNO,41 SAY SITE:NAME
ENDIF
 STORE LNO+1 TO LNO
SELE SECO
 FIND '&BORSIDC'
   DO WHILE SID = BORSIDM .AND. .NOT. EOF
      @ LNO,25 SAY TYP:NAME
      @ LNO,38 SAY TYP:NUM
      @ LNO,49 SAY TYP:LOC
      STORE RECPT+1 TO RECPT
      STORE LNO+1 TO LNO
    SKIP
   ENDDO
    STORE LNO+1 TO LNO
  SELE PRIM
  CONTINUE
ENDDO
  IF RECPT = 0
   IF WANT = 'P'
    REMARK  DID NOT FIND YOUR PROJECT, DO YOU WANT A LIST TO REENTER NAME FROM?
   ELSE
    REMARK  DID NOT FIND YOUR SITE, DO YOU WANT A LIST TO REENTER NAME FROM?
   ENDIF
    ACCEPT 'ENTER Y FOR YES AND N FOR NO' TO ANS
    STORE !(ANS) TO ANS
   IF ANS = 'Y'
     DO BORPROJ
     LOOP
   ELSE
     STORE 'Z' TO TRY
     LOOP
   ENDIF
  ENDIF
 ENDIF
STORE 0 TO RECPT
 STORE 'Z' TO TRY
ENDDO
* END OF MAIN DO LOOP
 STORE LNO+1 TO LNO
 @ LNO,3 SAY
EJECT
SET FORMAT TO SCREEN
RETURN
```

```
* PRINT TEST RESULTS FOR A GIVEN PROJECT OR SITE BY BORING   BORRESUL.PRG
SAVE TO ALLVAR
CLEAR
STORE 'T' TO TRY
*  MAIN DO LOOP
DO WHILE TRY <> 'Z'
ACCEPT  'ENTER P TO LIST FOR A PROJECT NAME, OR S TO LIST FOR A SITE' TO WANT
STORE !(WANT) TO WANT
 IF WANT = 'P'
  ACCEPT  'ENTER PROJECT NAME' TO PROJM
 ELSE
  store 'S' to want
  ACCEPT  'ENTER SITE NAME' TO SITEM
 ENDIF
SELE PRIMARY
USE BORSID INDEX BORSIDN
SELE SECO
USE BORRSL INDEX BORRSLI
SET PRINT ON
?? CHR(27)+"P"
?? CHR(15)
?? CHR(27)+"0"
SET PRINT OFF
STORE 1 TO PAGENO
SET FORMAT TO PRINT
 IF WANT = 'P'
  STORE !(PROJM) TO PROJM
  @ 3,5 SAY 'SUMMARY OF TEST RESULTS FOR PROJECT: '
  @ 3,42 SAY PROJM
 ELSE
  STORE !(SITEM) TO SITEM
  @ 3,5 SAY 'SUMMARY OF TEST RESULTS FOR SITE:'
  @ 3,39 SAY SITEM
 ENDIF
  @ 5,1 SAY 'ELEVATION'
  @ 5,13 SAY 'DEPTH'
  @ 5,20 SAY 'TEST NAME'
  @ 5,31 SAY 'TEST DATE'
  @ 5,42 SAY 'MATERIAL'
  @ 5,53 SAY 'RESULT 1'
  @ 5,68 SAY 'RESULT 2'
  @ 5,83 SAY 'RESULT 3'
  @ 5,98 SAY 'RESULT 4'
  @ 6,53 SAY 'REMARKS'
 STORE 8 TO LNO
 STORE 0 TO RECPT
SELE PRIM
 IF WANT = 'P'
   LOCATE FOR !(PROJ:NAME) = PROJM
   STORE SID TO BORSIDM
   STORE STR(SID,5,0) TO BORSIDC
   STORE TOP:HOLE TO TOPELM
 ELSE
   LOCATE FOR !(SITE:NAME) = SITEM
   STORE SID TO BORSIDM
```

```
   STORE STR(SID,5,0) TO BORSIDC
   STORE TOP:HOLE TO TOPELM
 ENDIF
DO WHILE .NOT. EOF
 SELE SECO
  FIND '&BORSIDC'
 IF # <> 0
   @ LNO,3 SAY 'BORING NO.:'
   @ LNO,15 SAY BORID
   @ LNO,33 SAY 'SID:'
   @ LNO,38 SAY SID USING '99999'
   @ LNO,45 SAY 'TOP ELEV.:'
   @ LNO,56 SAY TOPELM USING '99999.99'
  IF WANT = 'P'
   @ LNO,70 SAY 'SITE:'
   @ LNO,76 SAY SITE:NAME
  ELSE
   @ LNO,70 SAY 'PROJECT:'
   @ LNO,79 SAY PROJ:NAME
  ENDIF
   STORE LNO+2 TO LNO
  DO WHILE SID = BORSIDM .AND. .NOT. EOF
      @ LNO,1 SAY TEST:ELEV
      @ LNO,12 SAY TST:DEPTH
      @ LNO,20 SAY TEST:NAME
      @ LNO,31 SAY TEST:DATE
      @ LNO,42 SAY TEST:MAT
      @ LNO,53 SAY TEST:RES1
      @ LNO,68 SAY TEST:RES2
      @ LNO,83 SAY TEST:RES3
      @ LNO,98 SAY TEST:RES4
      STORE LNO+1 TO LNO
      @ LNO,53 SAY REMARKS
      STORE RECPT+1 TO RECPT
      STORE LNO+1 TO LNO
    SKIP
   ENDDO
   STORE LNO+1 TO LNO
 ENDIF
    IF LNO >= 60
     @ LNO+2,62 SAY PAGENO
     STORE PAGENO + 1 TO PAGENO
      IF WANT = 'P'
       @ 3,5 SAY 'SUMMARY OF TEST RESULTS FOR PROJECT: '
       @ 3,42 SAY PROJM
       @ 3,83 SAY '(CONTINUED)'
      ELSE
       @ 3,5 SAY 'SUMMARY OF TEST RESULTS FOR SITE:'
       @ 3,39 SAY SITEM
       @ 3,80 SAY '(CONT.)'
      ENDIF
     @ 5,1 SAY 'ELEVATION'
     @ 5,13 SAY 'DEPTH'
     @ 5,20 SAY 'TEST NAME
     @ 5,31 SAY 'TEST DATE'
```

```
      @ 5,42 SAY 'MATERIAL'
      @ 5,53 SAY 'RESULT 1'
      @ 5,68 SAY 'RESULT 2'
      @ 5,83 SAY 'RESULT 3'
      @ 5,98 SAY 'RESULT 4'
      @ 6,53 SAY 'REMARKS'
      STORE 8 TO LNO
    ENDIF
   SELE PRIM
   CONTINUE
   STORE SID TO BORSIDM
   STORE STR(SID,5,0) TO BORSIDC
   STORE TOP:HOLE TO TOPELM
ENDDO
   IF RECPT = 0
    IF WANT = 'P'
     REMARK  DID NOT FIND YOUR PROJECT, DO YOU WANT A LIST TO REENTER NAME FROM?
    ELSE
     REMARK  DID NOT FIND YOUR SITE, DO YOU WANT A LIST TO REENTER NAME FROM?
    ENDIF
     ACCEPT 'ENTER Y FOR YES AND N FOR NO' TO ANS
     STORE !(ANS) TO ANS
    IF ANS = 'Y'
      DO BORPROJ
      LOOP
    ELSE
      STORE 'Z' TO TRY
      LOOP
    ENDIF
   ENDIF
 STORE 'Z' TO TRY
ENDDO
* END OF MAIN DO LOOP
 STORE LNO+1 TO LNO
 @ LNO,3 SAY '  '
CLEAR
RESTORE FROM ALLVAR
EJECT
SET FORMAT TO SCREEN
RETURN
```

```
* PRINT A TABULAR LOG OF TEST RESULTS FOR A GIVEN BORING    BORLOGT.PRG
STORE 'BORRSL INDEX BORRSLI' TO BFILE
store 'A' to repeat
DO WHILE repeat <> 'S'
DO BORFIND
FIND '&BORSIDC'
 IF # = 0
  accept 'NO DATA FOR THIS BORING, DO YOU WANT TO ENTER ANOTHER? Y OR N' TO ANS
   store !(ans) to ans
    IF ans = 'Y'
     LOOP
    ELSE
     USE
     SET FORMAT TO SCREEN
     RETURN
    ENDIF
 ENDIF
 STORE 'S' TO REPEAT
ENDDO
SET PRINT ON
?? CHR(27)+"P"
?? CHR(15)
SET PRINT OFF
SET FORMAT TO PRINT
@ 3,10 SAY 'PROJ:.'
@ 3,17 SAY PROJM
@ 3,60 SAY 'SITE:'
@ 3,66 SAY SITEM
@ 5,5 SAY 'TEST RESULTS FOR BORING:'
@ 5,31 SAY BORID
@ 5,48 SAY 'SID:'
@ 5,52 SAY BORSIDM USING '99999'
@ 5,60 SAY 'TOP ELEV:'
@ 5,70 SAY TOPELM
  @ 7,1 SAY 'ELEVATION'
  @ 7,13 SAY 'DEPTH'
  @ 7,20 SAY 'TEST NAME'
  @ 7,31 SAY 'TEST DATE'
  @ 7,42 SAY 'MATERIAL'
  @ 7,53 SAY 'RESULT 1'
  @ 7,68 SAY 'RESULT 2'
  @ 7,83 SAY 'RESULT 3'
  @ 7,98 SAY 'RESULT 4'
  @ 8,55 SAY 'R E M A R K S'
STORE 10 TO LNO
STORE 0 TO PRNT
 DO WHILE SID = BORSIDM .and. .not. eof
      @ LNO,1 SAY TEST:ELEV
      @ LNO,12 SAY TST:DEPTH
      @ LNO,20 SAY TEST:NAME
      @ LNO,31 SAY TEST:DATE
      @ LNO,42 SAY TEST:MAT
      @ LNO,53 SAY TEST:RES1
      @ LNO,68 SAY TEST:RES2
      @ LNO,83 SAY TEST:RES3
```

```
        @ LNO,98 SAY TEST:RES4
        STORE LNO+1 TO LNO
        @ LNO,55 SAY REMARKS
    SKIP
    STORE LNO+1 TO LNO
    STORE 1 TO PRNT
ENDDO
    IF PRNT = 0
     @ LNO,5 SAY 'NO DATA FOR THIS BORING'
    ENDIF
@ LNO+1,3 SAY '   '
EJECT
SET FORMAT TO SCREEN
RETURN
```

END

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